Maximizing a Mother's Milk Production Capability

by Diana West, BA, IBCLC

Based in part upon "The Breastfeeding Mother's Guide to Making More Milk," by Diana West, BA, IBCLC, and Lisa Marasco, MS, IBCLC

Pregnant and new mothers are often concerned about making enough milk because of previous supply problems, breast surgery, hormonal dysfunction, or a family history of problems. Not having enough milk is the most common reason mothers stop breastfeeding. There are many ways to increase milk production after it has been shown to be deficit, but the most fundamental, yet often overlooked, step is maximizing a mother's inherent milk production capability from pregnancy onward by taking the following positive proactive steps.

Address Hormonal Challenges

It's an interesting paradox. The number one reason for weaning to formula is not having enough milk, but at the same time there seems to be an assumption that almost all women have the capability to make enough milk *if they just try hard enough*. The mothers who have moved heaven and earth to make just ounces more milk can tell us how unfair and untrue that assumption is. The reality is that some women have hormonal dysregulation that impair their milk-production capabilities.

In order to make milk, the body must produce the right amount of several hormones, secreting them at the right time, and have the capability to use them appropriately. These hormones include primarily estrogen, progesterone, prolactin,

oxytocin, insulin, and human placental lactogen. If the body is unable to produce enough of any of these hormones at the exact time that they are needed either before conception, during pregnancy, or after the birth, or is unable to use the hormones when they are secreted, then a mother may not be able to make a full milk supply.

Hormonal medications can interfere with this delicate balance, particularly if they are given at a time of glandular development. Hormonal birth control is a common culprit for low milk supply, particularly combined estrogen-progesterone oral contraceptives given at any stage of lactation and progestin-only injectable products given before six weeks postpartum.[1] Any oral contraceptive that contains estrogen is likely to suppress milk production significantly. Research studies have not shown that intrauterine devices that release progesterone affect milk production[2], probably because they transfer such low amounts of progesterone into the blood stream, but many women have reported supply decreases, indicating that some women may be particularly sensitive to any amount of progesterone. Non-hormonal intrauterine devices do not affect milk production.[3]

There are some hormonal conditions that can reduce milk production. The three lactation consultants see the most often are Polycystic Ovary Syndrome (PCOS), luteal phase defect (LPD), and thyroid dysfunction. Women with PCOS often have insulin-resistance challenges and lack of breast tissue development. Their breasts may be asymmetrical or unusually shaped. While not all women with asymmetrical or unusually shaped breasts have milk supply problems or PCOS, low milk production tends to be more common with PCOS.[4] Fortunately, there are new treatments that can be very effective, including the medication metformin and the herbal galactagogue goat's rue,[5]

particularly when given during pregnancy and the early postpartum period. Women who do not have PCOS but who have insufficient glandular tissue often also respond to these same treatments in combination with increased milk removal therapies.

Women who have experienced LPD have insufficient levels of progesterone in the second half of their menstrual cycles and frequently experience miscarriage in the first trimester due to low progesterone levels. A study in 1999 determined that the higher the progesterone levels are in pregnancy, the better the milk production is after birth[6], which makes sense given that progesterone is a key hormone for developing lactation tissue. There have been several informal reports of progesterone supplementation during pregnancy in women with LPD who have then experienced significantly better milk production than in previous lactation experiences. Bodley reported a case study in which the mother with LPD experienced no breast growth and very little milk production with her first child, but was provided progesterone supplementation during the second pregnancy and subsequently experienced significantly higher levels of milk production.[7] The strong caveat with progesterone supplementation for treating lack of glandular development related to LPD is that it must be given only during pregnancy and discontinued at around 37 weeks since progesterone inhibits milk synthesis.

Thyroid dysfunction is another known hormonal cause of low milk production. Rat studies indicate that any form of thyroid imbalance, hypothyroidism, hyperthyroidism, or postpartum thyroiditis affects milk ejection rather than milk synthesis.[8] Many women are not appropriately diagnosed, however, because the reference ranges for detecting abnormal TSH levels are narrower in pregnant and breastfeeding women than the general population at 0.5-2.5.[9] Thyroid hormone

replacement medication to normalize levels is often effective in enhancing milk ejection capability in affected women. Milk volume also can often be increased when treatment is provided for borderline levels.[10]

Begin Milk Removal in the Antenatal Period

Sue Cox, AM, RM, IBCLC, a midwife and lactation consultant in Australia, has studied the method of removing colostrum during late pregnancy for the purposes of mitigating the need for formula supplementation in babies of mothers with Type I diabetes.[11] No studies have yet examined antenatal milk removal as a technique for increasing milk production, but many physicians have recommended it in textbooks for improved breast care and easier breastfeeding,[12] and many lactation professionals have reported that mothers who have done it seem to experience earlier and more abundant milk production. It also helps mothers familiarize themselves with the landscape of their breasts and become accustomed to the idea of a previously erotic zone now providing nurturance for a new baby.[13] At the very least, the milk collected can be used as supplementation in the postpartum period.

This practice seems to be safe for most mothers unless they are at high risk for complications. Concern is frequently raised that prenatal milk expression could stimulate labor prematurely, but women have safely nursed during pregnancy throughout time and studies have confirmed that nursing through pregnancy is generally safe.[14] Oxytocin surges alone cannot induce labor; we experience such surges with every laugh, hug, and pleasurable bite of food. Women who have sex during pregnancy may experience orgasms, which release significantly highly surges of oxytocin than nipple stimulation,

yet most low-risk women are approved for sexual activity. Common sense dictates that if labor could be initiated so easily by nipple stimulation, mothers would not routinely require medications for labor initiation. Indeed, this was validated by a recent extensive literature review by Cox.[15] The likely reason is that oxytocin surges will induce labor only if there are sufficient oxytocin receptors in the middle layer of the myometrium (uterine wall).[16]

There have been two significant studies investigating the safety of antenatal milk expression. Ishii compared 110 women who continued breastfeeding through pregnancy to 774 women who did not breastfeed during pregnancy. There was no statistically significant difference in labor initiation between the two groups.[17] Forster et al studied 43 women who hand expressed milk twice a day from week 36 and found no evidence of fetal compromise. At six weeks postpartum, 95% of the women reported feeling positive about their experience of prenatal milk expression and stated that they would do it again.[18]

The usual recommendation for the practice of antenatal milk expression is to begin hand expressing daily starting at the thirty-fourth week of pregnancy when the mother is relaxed and warm, such as after taking a hot shower. She can express any colostrum drops into a spoon, and then use a small periodontal or similar blunt-end syringe to draw the milk up. The syringe can be refrigerated and more colostrum added as it is expressed over a period of two days or so. The syringe then can be frozen in an airtight zip-close bag for use as supplementation after the baby is born. Of course, it is always prudent for mothers to stop expressing if they experience any unusually strong

contractions.

A variation on this idea practiced in some traditional cultures is for husbands to suckle their wives' breasts during lovemaking. The milk would not be available for later supplementation, but the removal may nonetheless stimulate higher rates of production.

Nurse in the First Hour

Breastfeeding in the first two hours after birth has been shown to increase later milk production.[19] This is facilitated by the normal physiological process whereby most newborns find the breast and initiate suckling in fewer than fifty minutes when placed skin-to-skin on their mothers' abdomen.[20] They seem to receive a bolus of colostrum during this time, possibly due to the strong oxytocin surges expelling the placenta. Mothers who have had cesarean section births should be able to nurse a healthy infant with no complications while in the recovery room after surgery.

When the mother and baby are separated after birth or the baby is unable to breastfeed, hand expressing within the first hour after birth and at least every three hours thereafter until baby is able to begin nursing will go a long way toward establishing a strong milk supply and provide colostrum for auxiliary feedings. (Hand expressing is more effective than pumping in removing colostrum in the first 48 hours.[21])

Delay Bathing to Facilitate Latching

Although it is common practice in hospitals to immediately wrap babies after birth and hand them to their mothers tightly bound, there may be good reason to leave the hands wet and free. Babies who are placed on their mothers' chests with their hands free after

birth smear amniotic fluid onto the breasts as they use their hands and face to find them. If the mother has not washed it off, the smell of the fluid often draws them to the breast at the next feeding like a tracking beacon, facilitating latching.[22] This biological sequence seems to help babies cue into their natural latching instincts, increasing the likelihood of frequent, effective milk removal.

Facilitate Latching Instincts to Optimize Milk Transfer

A baby's ability to remove milk effectively is strongly dependent on how well he is attached to the breast and how effectively he is able to remove the milk. Ideas about *how* to get baby to attach well to the breast have been evolving in recent years. The basic objective is to get the mother's breast and nipple positioned deeply in the baby's mouth. At one time, it seemed that lactation counselors believed that there was only one right way to do this and that a mother must follow the "correct" procedure, like a recipe. Today, skilled counselors understand that there is no single correct way for a baby to latch to the breast. The only essential measures of a good latch are that mother and baby are comfortable and that milk transfers efficiently.

Many lactation professionals throughout the world are discovering, though, that techniques that tap into mothers' and babies' natural feeding instincts seem to result in easier and more effective breastfeeding. Comfort-driven positions that orient the mother in a reclined position and the baby ventrally (on his stomach), with his head higher than his bottom and his feet touching her legs (she may have to raise her knees) are becoming quite popular as a way to encourage maternal and infant feeding instincts.[23]

Augment Early Milk Removal

The amount of milk produced on Day 4 is predictive of the amount of milk a mother will make on Day 14.[24] Therefore, additional milk removal in addition to that removed by nursing can help calibrate a higher rate of milk production. This process happens both by increasing milk synthesis to replace the milk that was removed and by stimulating growth of more hormone receptors that are laid down in the early weeks in direct proportion to the volume of milk removed. This means that additional milk removal in the early postpartum days can give a long-term boost to a vulnerable milk supply.

There are many ways to accomplish this important objective. One way is by hand expressing for a few minutes after most breastfeeding sessions. Dr. Jane Morton and her colleagues at Stanford University found that hand expressing colostrum at least six times per day in the first three days postpartum increases later milk production by an average of 45%.[25]

Breast massage while breastfeeding can increase breast drainage. One study examined the effect of massage while pumping and found 40-50% more milk was removed when pumping with massage than without it.[26] Breast compression is a technique to apply external hand pressure on the lactation tissue to propel residual milk through the ducts. It is done by holding the breast with a thumb on top and fingers underneath (or vice versa), far back on the breast away from the areola. Compress the tissue between the fingers and thumb gently but firmly–it shouldn't hurt or pinch ducts–and hold the compression. The baby usually will begin swallowing more rapidly, or the mother will see milk spraying into the pump flange. When the baby swallows or the milk spray slows, she should release the pressure and rotate a little to another firm area,

repeating the process. Breast compressions can be done at any stage of lactation to increase milk drainage.

Just as dairy farmers do, a mother can also use a few strokes of hand expression to "strip" the last creamy drops of milk at the end of a feeding or pumping. Combining hand expression and pumping together can be even more powerful. A study by Dr. Jane Morton found that a combination of breast compression and hand expressing milk after pumping or nursing can yield significantly more milk.[27]

Warm, moist compresses applied to the breasts just prior to nursing or pumping can also help the milk to start flowing.[28] There are commercial products, a sock can be filled with uncooked non-instant rice and tied closed. The shape of the sock allows it to be wrapped comfortably around the mother's breasts. A warm, wet washcloth is also helpful. Hot showers are famous for initiating milk ejection, although they may not always be convenient.

Any form of nipple stimulation, such as gentle tickling, rolling, or pulling, can encourage milk ejection. Reverse pressure softening, often used for engorgement, is an easy and effective variation.
(kellymom.com/bf/concerns/mom/rev_pressure_soft_cotterman.html).
Shoulder massages and back rubs also seem to have an effect on the reflex. One particularly effective technique to stimulate an acupressure point that can trigger milk ejection is massage halfway between the neck and shoulder while the mother is nursing or pumping.

Assess Infants Thoroughly to Identify Breastfeeding Impairments

Although mothers often assume the blame when milk production falters, a baby's inability to remove milk adequately may be the true culprit. Identifying any impairment as quickly as possible allows the possibility of remediation and support of the mother's milk supply through auxiliary milk removal.

The most critical aspect of an infant breastfeeding assessment is sucking capability. Effective sucking depends on baby's ability to coordinate the use of his tongue, cheeks, palate, jaw, facial muscles, and lips. Any significant variations or problems may affect his ability remove milk efficiently.

The clearest evidence for a sucking problem is painful nursing and a nipple that comes out of baby's mouth significantly misshapen, bruised, cracked, or bleeding. On the other hand, a baby with a weak suck isn't able to draw out his mother's nipple much at all. The longer a mother receives pain medications during labor, the greater the chance they will affect baby's sucking ability until his body has eliminated them. Suck problems can also occur as the result of anatomical malformations or underlying problems such as torticollis, a tightening of some of the neck muscles. Newborns can develop disorganized sucking habits as a result of not getting enough milk out of the breast: they were born sucking well, but then their sucking movements deteriorated as they desperately tried alternate ways to get milk from the breast. Babies are smart, and when one thing doesn't work, they try another. Once they experience a little success at the breast and discover the movements that draw milk out most effectively, the suck often improves spontaneously without any other intervention. A baby also may be unable to remove milk effectively due ankyloglossia, which is now being more broadly recognized in both anterior and posterior manifestations.[29]

Accurately identifying and resolving suck problems can be a challenge even for lactation consultants. The first steps are to ensure that baby is latching as deeply as possible, feed him adequately in a way that is supportive of breastfeeding while working to solve the problem, and have the mother pump as needed to maintain maximum milk production. When those bases are covered, some lactation consultants may refer mothers to another specialist for suck training exercises or special feeding methods that encourage baby to move his tongue more effectively. At-breast supplementers or special bottle nipples may also be used. If these techniques don't work, the baby should be evaluated by a healthcare provider who specializes in identifying and treating suck dysfunction.

When anatomical suck dysfunction has been thoroughly assessed and ruled out, therapies that treat nerve impingements or other subtle interferences are worth exploring. Some babies respond positively to infant oral motor function therapy by a speech or occupational therapist.[30] Chiropractic treatment also can be effective in improving some suck problems.[31] A third option is craniosacral therapy (CST), a very gentle manipulation of the plates of the skull to release subtle pressures on nerves affecting muscles and reflexes. CST has been effective in improving some suck problems.[32]

The other critical component of an infant assessment is respiratory function. A baby who cannot breathe easily will have difficulty coordinating sucking and swallowing with breathing, which makes it challenging to remove milk well enough to sustain good milk production. Narrow nasal passages or other structural blockages of the nose can also interfere with breathing when baby is eating. Hypotonic conditions such as laryngomalacia and tracheomalacia may cause a baby to struggle at the breast, feeding in very short sucking bursts (three to five sucks) with long breaks to recover. He also may

hold his breath for several sucks and swallows or let go of the breast entirely in order to gasp and pant and catch his breath. He often ends the feeding before he is full simply because he is too tired to continue. As a result, he may not take in enough milk to gain weight well, and milk production may suffer over time. Severe cases are usually caught early, and only rarely corrected with surgery. The more common mild to moderate cases often go unnoticed unless they are causing a problem. These conditions usually resolve on their own by the end of baby's second year.

Maintaining as open an airway as possible is crucial if the baby has breathing issues. He should be positioned at the breast with his neck extended back to open the airway further and make breathing easier for him. Keeping him in a more upright position is also helpful. A ventral (prone) feeding position will maximize lung expansion and volume. Pacing the feedings by initiating periodic breaks before he falls behind is usually necessary, especially if the baby routinely holds his breath for too long. Milk production may need to be supported with pumping until feedings improve.

Babies who have cardiopulmonary diagnoses breathe more rapidly to obtain enough oxygen into their bodies. They tire easily in normal activities and so may end feedings before they get all the milk they need. A feeding strategy that minimizes the effort they expend is important since their faster breathing and heart rates use more calories. Breastfeeding is easier than bottle-feeding and provides higher and more stable oxygen levels.[9] Massaging the breast before feeding and breast compression during feeding can help get more milk into a baby with less effort on his part. Careful pacing and smaller, more frequent feeds can help reduce the risk of hypoxia and aspiration in babies with airway anomalies and cardiac issues. It may be necessary to pump after feedings in

order to maintain an adequate supply. Many babies with cardiac difficulties do well with at-breast supplementation, but others may require supplementary bottles. The good news is that these babies usually breastfeed much better after the heart defect is corrected surgically.

Consider Alternative Therapies

Alternative therapies such as chiropractics, acupuncture, and acupressure are attractive options for many mothers because they use only external techniques to stimulate milk production or milk release. They have the most potential for mothers with normal mammary tissue.

Chiropractics focus on the neurological effects of spinal joint dysfunction. Dr. Sharon Vallone has discovered that chiropractic adjustments sometimes help increase milk production in women whose spinal vertebrae move out of position and compress or irritate spinal nerves (subluxation).[33] Chiropractic treatment may work by restoring nerve communication in key areas that have been reduced or blocked. This approach may be appropriate when there is a history of physical trauma, nerve pain, numbness, or impingements.

Acupuncture is a traditional Chinese medicine (TCM) therapeutic practice during which specific areas on the body are pierced with very fine needles. Acupressure, also called shiatsu, is the application of pressure with thumbs or fingertips to points on the body for therapeutic effects while reflexology focuses on trigger points in the foot. Although not as common in the Western world, acupuncture in particular has been used to treat low milk production for over two thousand years. Research conducted in multiple

countries suggests that it can be effective. Acupuncture can stimulate both prolactin and oxytocin, depending on the points chosen by the practitioner. Because TCM relies on a thorough screening of the patient to select the proper treatment locations, mothers interested in acupuncture or acupressure treatments for low milk production should seek an experienced and qualified practitioner, who may teach techniques that can be used at home as well. Acupuncture may not be as effective for low production when the mother has mammary hypoplasia.[34]

Avoid Unnecessary Temporary Weaning

Some mothers facing a medical procedure, drugs, or hospitalization are told that they can't nurse for a period of time. To make matters worse, little or no guidance is provided on how to maintain production, and by the time breastfeeding is "allowed" again, milk supply is damaged.

When the issue is medication that a mother requires, weaning is almost never necessary, except in cases of chemotherapy or radioactive drugs, Dr. Thomas Hale's book, *Medications and Mothers' Milk* (updated every two years) and LactMed, the US Government database (lactmed.nlm.nih.gov), are excellent resources for determining the transfer and bioavailability rates of medications in human milk. Local anesthesia does not transfer into milk in detectible levels, so it is not necessary to interrupt breastfeeding in any way when it is used. General anesthesia does not require weaning or interrupting breastfeeding. As soon a mother awakes fully from general anesthesia, it is safe to nurse her baby or pump her milk because general anesthetic medications are rapidly metabolized. When she is no longer drowsy, the anesthetic medications are no longer

active in her milk.

Radiopaque and radiocontrast agents typically used in ductogram, CT/CAT, MRI, MIBI scan, or PET scan diagnostic tests are extremely inert and virtually unabsorbed when taken orally, so they do not pass into the milk and it is not necessary to interrupt breastfeeding when they are used. Radioactive isotopes, including radioactive iodine, used for diagnostic testing or therapy are NOT safe during breastfeeding because these compounds accumulate in milk and are hazardous to the baby. Radioactive iodine-131 in particular is not only NOT safe for breastfeeding because the affected milk can harm the baby, but the mother is also at risk of radiation saturation into breast tissue, putting her at higher risk for breast cancer. Use of this particular iodine requires complete weaning several weeks beforehand to allow her breast tissue time to involute so there is less tissue to be harmed. For use of other types of radioactive isotopes, it is not necessary to completely wean. A mother only needs to interrupt breastfeeding temporarily, feeding her infant previously pumped milk or formula until tests (available from most hospital radiology departments) show that the isotopes are no longer in her milk. In the meantime, she can pump and discard the milk to keep up her milk supply and accelerate radiation removal. For a list of radioactive isotopes and the length of time they remain in the milk, visit http://neonatal.ttuhsc.edu/lact/radioactive.pdf.

Weaning for diagnostic or tissue-removal surgery is almost never necessary or helpful. Since milk can continue to be produced for many months after weaning, there is almost always residual milk in the ducts. Abrupt weaning can result in plugged ducts and infectious mastitis. To minimize milk seepage during the procedure, the breast can be thoroughly drained by nursing or pumping immediately prior to the diagnostic or tissue-

removal surgery.

A ductogram, in which a catheter is inserted into a lactation duct through the nipple to either inject radioactive dye that can be detected on x-ray or insert a miniature camera to visualize the internal duct walls, does not affect milk production or safety since there are no incisions or tissue removal and the radioactive dye is not absorbed into either the mother's or the baby's tissue (see below). Needle aspiration to remove the contents of fluid-filled cysts and galactoceles does not affect milk production or safety. Biopsy to remove tissue for diagnostic analysis can damage lactation ducts or nerves depending on the technique, amount of tissue removed, and location of the incision. Incisions in the upper, inner quadrants of the breast are usually least harmful, while incisions around the areola can damage nerve response affecting milk ejection. Scars or infections from a biopsy also may harm the milk-making tissue. Some surgeons may be reluctant to perform biopsies on a lactating breast because it can be more difficult to see the affected tissue, but it can be done and the milk will not delay wound healing. There is risk that a galactocele (milk-filled cyst) could develop, but it can be treated with aspiration. If infection occurs, it can be treated with antibiotics that are safe for breastfeeding.

Imaging techniques used for diagnosis of pathology (such as ultrasound, mammogram, magnetic resonance imaging (MRI), positron emission tomography (PET) scan, 2-Methoxy Isobutyl Isonitrile (MIBI) scan, electrical impedance tomography (EIT) scan, computed tomography (CT) scan/computer axial tomography (CAT) scan, thermography, or diaphanography) are non-invasive and do not affect milk production or safety. It may be more difficult to interpret breast tissue results due to the increased density from lactation, but it is not impossible. It is not necessary to interrupt or suspend

breastfeeding to have these procedures.

Radiation from diagnostic procedures using x-rays, mammograms, MRI, and CT/CAT scans are all safe during lactation. While this kind of radiation does have the ability to mutate DNA in live cells, it does not collect in the milk and is therefore compatible with uninterrupted breastfeeding.

Weaning will not help a mother "conserve her strength." Breastfeeding is considerably more convenient and time-saving than bottle-feeding. It provides an emotional connection and intimacy that is nurturing to both mother and baby when they need it most.[35]

Avoid Unnecessary Supplementation

There are certainly times when baby isn't getting enough milk and must be supplemented. But there are also times when unnecessary supplements sabotage milk production by reducing milk removal and increasing feeding intervals. The most common reasons for unnecessary supplementation are excessive weight loss, jaundice, and hypoglycemia.

Recent studies have determined that maternal intrapartum fluid balance can increase a baby's fluid load at birth, resulting in an artificially high birth weight, which in turn can cause the appearance of excessive weight loss when the fluid load is homeostatically corrected. Although mothers are always entitled to the bragging rights of the baby's true birth weight, a new baseline weight taken at 24 hours is more clinically appropriate for weight comparison and loss determinations.[36]

Jaundice is a common cause of inappropriate formula supplementation. According to the Academy of Breastfeeding Medicine, one third of all breastfed infants

still have elevated bilirubin levels by 2-3 weeks of age (1.5-5.0 mg/dL). Levels that have stabilized below 20 mg/dL in healthy term infants will clear without treatment within 15 weeks. Because the proven benefits of breastfeeding far outweigh the risk of mild to moderate jaundice, there is no medical indication for interruption of breastfeeding unless the serum bilirubin concentration exceeds 20 mg/dL and is rising rapidly (>0.5 mg/dL per hour).[37]

Hypoglycemia is another common cause of unnecessary supplementation, but it is normal in the immediate postpartum period and occurs in nearly all mammals. There is no evidence that treating asymptomatic newborns results in better short or long term outcomes.[38] Glucose water is not an appropriate enteral feeding substitute.[39]

Finally, mothers should be encouraged to avoid unnecessary bottle supplementation at night provided by another caregiver in order to gain more sleep. While it may seem that pumping during the daytime so someone else can give a bottle of pumped milk while a mother sleeps is one way to have the best of both worlds, it can cause her milk production to decrease because her breasts become over-full. She is also losing the advantage of higher prolactin levels during REM sleep, as well as the prolactin surge in response to baby's suckling that is greater than in the daytime.[40] Milk flow and the resulting higher amounts of milk transfer also tend to happen more easily at night when the mother is sleepy and relaxed.

Avoid Feeding Schedules

Mothers are often urged to get baby on a schedule as quickly as possible to instill early discipline, fit him conveniently into family life, make life more predictable, or for "sleep

training." Schedules may seem helpful to parents, but they don't always meet the needs of breastfeeding mothers and babies. Rather than allowing milk production to be driven by baby as nature designed, schedules artificially determine when feedings will take place. Mothers with abundant production and vigorously nursing babies may do well, but mothers with marginal supplies, low breast storage capacities that signal milk production shutdown more quickly, or babies with difficulties often do not. Even if all looks well in the beginning, a sudden drop-off in production can happen after a few months if an insufficient number of hormone receptors were established in the early weeks.

Facilitate Proximity and Frequency to Maximize Milk Removal

Research shows that there is no medical reason for healthy mothers and babies to be separated, which is why central nurseries are prohibited by the WHO and UNICEF Baby Friendly Hospital Initiative. When a mother stays in close proximity to her baby after birth, it stimulates him to feed more often and helps her to respond to his earliest hunger cues. It is important for mother's to keep in mind that frequent feedings in the early days are normal, and for mothers at risk of low milk production, they may be essential to calibrate the highest milk supply possible. They also help create greater storage capacity, which allows her to store more milk at one time for her baby before her breasts receive a signal to slow down milk production.

Facilitate Self-Efficacy

When mothers have a fundamental belief in their likelihood of breastfeeding success, they have self-efficacy. This level of certainty goes beyond confidence to such a strong

assumption of success that a mother does not even think about it. The breastfeeding mothers of long ago didn't give a thought to infant feeding "success," any more than the formula-feeding mothers of today do. Problems with human biology have always happened. Kidneys fail, eyesight is lost, but in real world terms, we do not "hope" that we will keep our kidneys and our vision, and we look immediately for solutions if something goes wrong. We have a strong sense of self-efficacy about almost every routine event in our lives. Unfortunately, breastfeeding is no longer routine.

A strong sense of breastfeeding self-efficacy can prevent the bad-breastfeeding-advice causes. Even hormonal issues are often resolved more easily because they are addressed more quickly. The mother with a strong sense of self-efficacy is not "committed to breastfeeding." She simply breastfeeds. If it is not working, she seeks solutions and does not tolerate incompetence.

Breastfeeding success becomes even more likely when healthcare workers themselves have a better sense of self-efficacy in their breastfeeding skills. They look harder and longer for solutions. Here are a few ways to increase your professional self-efficacy as you work with breastfeeding mothers:

- Be confident that there are solutions. Almost all mothers have been able to increase their production at least partially with good help.
- Cover the bases. Make sure help is swift and appropriate.
- Assume that every pregnant and new mother wants and plans to breastfeed; to ask implies that it's an issue of choice, not of expected and normal behaviors.

- Explain the importance of normal birth and help her find the resources – internal and external – to normalize her own as much as possible.

- Provide workplaces with information on the Ten Steps (available at XX WHO and XX ILCA sources) and make sure pediatricians understand the hazards of unnecessary supplementation.

- Consider implementing a "satellite milk bank" at a local hospital – not to produce donor milk but to buy it for use as needed.

- Success breeds success, failure breeds failure, so create a series of little successes for the mother. "A quarter ounce? That's more than twice what you pumped yesterday!"

- Provide targeted materials to obstetricians, pediatricians, radiologists, anesthesiologists, allergists, and others whose well-intentioned misinformation can derail breastfeeding.

- Give mothers strong, enthusiastic encouragement to attend La Leche League meetings or similar mother-to-mother groups – often the single most effective way to counter misinformation on scheduling and other new-parent issues. The experience of being in the presence of other nursing mothers is invaluable.

- Continue learning and researching so that you never reach the bottom of your bag of options.

- Nurture the professional contacts that provide that bottomless bag of options. They may include IBCLCs and support group leaders; professionals who perform frenotomies or frenectomies; and doulas and midwives, among others.

Breastfeeding is About More than Just the Milk

As you consider these steps to helping mothers build strong milk supplies, cultivate an attitude solidly within yourself that the value of breastfeeding goes far beyond the amount of milk a mother makes. Breastfeeding is a baby's first – and possibly deepest – human relationship, and it is a woman's physiological and emotional introduction to motherhood. There's no substitute for that, any more than there is an equivalent substitute for human milk. The mother who pumps exclusively is doing a truly wonderful thing, but without the breastfeeding relationship. The mother who nurses her baby with little or no milk of her own has the full joy of the breastfeeding experience.

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