

# FLORIDA MOTHER'S OWN MILK (MOM) TOOLKIT

Improving Use of Mother's Own Milk  
in the Neonatal Intensive Care Unit

**Florida Perinatal Quality Collaborative**



Partnering to Improve Health Care Quality  
for Mothers and Babies

The Florida Mother's Own Milk (MOM) toolkit is intended to provide guidance to hospitals and health care providers in the development of individualized policies and protocols related to promoting mother's own milk for infants in the NICU. It is not to be construed as a standard of care; rather it is a collection of resources that may be adapted by local institutions in order to develop standardized protocols. The toolkit will be updated as additional resources become available.

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## INTRODUCTION

Human milk is the gold standard for nutrition and feeding infants, especially those born prematurely.<sup>1</sup> Infants fed human milk have lower mortality, improved gastrointestinal maturity and better feeding tolerance, reduced occurrence of sepsis and necrotizing enterocolitis, better visual development, fewer chronic diseases later in life (e.g., obesity, diabetes, asthma and cancer) and higher IQ scores.<sup>2-6</sup> Breast feeding promotes mother-infant bonding and improves maternal health, as well as reduces length of hospital stay and healthcare costs.<sup>7</sup>

Necrotizing enterocolitis (NEC) is a costly and potentially devastating disease for which the very low birth weight (VLBW; <1500 g) infant is at high risk. NEC is multifactorial in origin and research suggests that provision of human milk, in particular mother's own milk (MOM), may be a preventive strategy.<sup>2, 8-10</sup> Neonatal Intensive Care Units (NICUs) that follow best feeding practices and prioritize human milk feedings have noted a reduction in NEC rates.<sup>11</sup>

Florida NICUs participating in Vermont Oxford Network databases (VON) report that 45.7% of VLBW infants received any human milk at discharge in 2013.<sup>12</sup> While Florida's breastfeeding initiation rates are as high as 77%, there remains a unique opportunity to improve our use of MOM and breastfeeding rates in this vulnerable NICU population.<sup>13</sup> The Florida Perinatal Quality Collaborative (FPQC) proposes an evidence-based statewide NICU quality improvement (QI) initiative to improve utilization of MOM, as well as to identify and remove barriers to use of MOM for VLBW infants in Florida.

FPQC's expert work group includes neonatologists, neonatal nurses, lactation consultants, and change facilitators who will assist hospitals during the MOM Initiative. FPQC, under contract with the Florida Department of Health, has developed evidenced-based best practice guidelines and tools to facilitate implementing changes in Florida NICUs.

The FPQC MOM Toolkit is designed as a living document that will be updated as new evidence-based information and strategies are identified. All hospitals providing care to pregnant women and/or infants may utilize this toolkit. Readers are advised not to rely solely on these guidelines, but to adapt them and find resources based on their local facility's level of care and patient populations.

An online Tool Box hosts tools, reference articles, links, and slide sets for health provider use in implementing their MOM initiative. This tool box will be updated regularly as new information becomes available. It can be accessed via the [Mother's Own Milk Initiative website](#) under "current projects" on [FPQC.org](http://FPQC.org).

### MOM INITIATIVE'S AIM

The aim of FPQC's MOM Initiative is to apply evidence-based interventions to increase the use of MOM in VLBWs in the NICU.

Specifically, the FPQC aims to increase the following during the infant's initial NICU admission:

1. The percentage of mothers who intend to provide their own expressed milk.

2. The percentage of infants whose feeds are comprised of at least 50% MOM at day of life 7, 14, 28, discharge.
3. The percentage of mothers who maintain their milk supply and their volume of MOM >500 ml at day of life 7, 14, 28, and discharge.
4. The percentage of mothers intending to breastfeed who experience nutritive breastfeeding within 7 days prior to discharge.

Specific goals for these aims will be determined in discussion with collaborating hospitals after collection of baseline data.

### MOM INITIATIVE'S KEY RECOMMENDATIONS

Each hospital must review their available institutional and community resources in order to develop their site's written protocol to achieve the MOM Initiative's goals.

1. Standardize a process to provide maternal education and advocate for MOM.
2. Document a mother's informed decision to provide MOM.
3. Standardize a process for lactation assessments, including initial assessment within 24 hours of NICU admission.
4. Determine who is responsible and available to initiate or assist with breast milk pumping, including first pumping occurrence before the infant's 6<sup>th</sup> hour of life.
5. Standardize a process to secure a sufficient number of double electric breast pumps (hospital and home use) for each NICU.
6. Provide breastfeeding education and measure competencies for nursing and medical staff caring for infants and high-risk mothers.
7. Have MOM available within 72 hours of the infant's birth by providing specific maternal education on early initiation of pumping, frequency, use of hand expression, use of pump logs, and colostrum collection.
8. Standardize a process to ensure appropriate supplies are available to facilitate breastfeeding and the provision of human milk.
9. Standardize a process to monitor MOM supply.
10. Standardize guidelines for skin-to-skin, non-nutritive breastfeeding, test weights, transition to nutritive breastfeeding, use of nipple shields, discharge feeding plan, and breastfeeding support.

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## EDUCATION ON MOM AND PRENATAL ADVOCACY

### MOM Initiative recommendations:

- Standardize a process to provide maternal education and advocate for MOM.

### *Education*

Education should focus on the importance of MOM for VBLW infants. In February 2016 the American College of Obstetricians and Gynecologists issued a [Committee Opinion](#) reinforcing the importance of breastfeeding and the unique opportunity obstetricians have to encourage it.<sup>1</sup> Prenatal breastfeeding education can increase initiation rates as well as duration of breastfeeding. A consistent message regarding the importance and benefits of MOM and breastfeeding should be discussed in all prenatal obstetric encounters.<sup>2</sup> The MOM Initiative recommends that all women at increased risk of preterm delivery receive lactation counseling as part of their prenatal consult (see MOM toolkit section “Breastfeeding Education for Staff”). Additional education should include a demonstration of breast pump use, which can empower a mother to self-advocate for a pump and/or begin hand expression as soon as possible after delivery.

The American Academy of Pediatrics 2012 statement on human milk provides a concise summary of the benefits of human milk and recommended duration of breastfeeding.<sup>3</sup> Pediatric providers should be familiar with this information to help mothers make an informed decision regarding the provision of mother’s own milk, particularly in the postpartum period and for preterm infants. For more information, see the MOM patient education slide set in the MOM [online Toolbox](#), and the Joint Commission’s “[Speak up: What you need to know about breastfeeding](#)” brochure.<sup>4</sup>

### *Women with high-risk pregnancies*

Specialized education about human milk and breastfeeding is needed for women with high-risk pregnancies, such as those with pregnancy complications, multiple gestations, pre-existing health conditions, or lifestyle factors that increase risk of prematurity or NICU admission. MOM is unique and has many advantages over donor human milk and formula, particularly in regards to growth and neurodevelopment in preterm infants.<sup>5-7</sup> Mothers should be given a consistent message that colostrum or human milk is medicine for their premature infant.<sup>8-10</sup> Spatz et al. identify key elements of education for high-risk mothers including human milk’s role in: 1) preventing infection and its immunobiologic properties; 2) improving enteral feeding tolerance and decreasing incidence of necrotizing enterocolitis; 3) promoting the infant’s neurodevelopment; and 4) empowering mothers and asking them to be active participants in care by providing mother’s own milk.<sup>11</sup> Having a standardized educational approach about MOM can result in an increased proportion of mothers providing MOM for their infants in the NICU, even if their initial intent was to formula-feed.<sup>8-10</sup> It is important to provide this education to mothers in the antenatal period, which may facilitate informed decision-making, increase rates of early pumping initiation, increase the availability of MOM, and alleviate maternal stress.<sup>11, 12</sup> As direct breastfeeding is difficult for many preterm infants during the neonatal period, it is vital to emphasize the importance of providing expressed mother’s own milk.



Racial disparities in rates of breastfeeding exist nationwide, with African-American infants having the lowest rates compared to other ethnic or racial groups. Currently in Florida, African-American women have lower breastfeeding initiation rates than white women (72.9% vs. 85.2%, respectively).<sup>13</sup> Additionally, there is a racial disparity in VLBW births, with African-American women having higher rates than white women. From 2012-2014, the rate of preterm births for African-American women in Florida was 17.9% compared to 12.7% in White women.<sup>14</sup> The combination of lower breastfeeding rates and high rates of prematurity place African-American infants at increased risk of not receiving MOM. A recent quality improvement (QI) project confirmed this racial disparity in VLBW infants who received MOM at NICU discharge.<sup>15</sup> At baseline white infants were nearly three times more likely than African-American infants to receive MOM at hospital discharge (40% vs 13%;  $p=0.004$ ). After project implementation, there was a three-fold greater odds of receiving MOM at discharge compared to baseline (OR 3.01, 95% CI 1.75-5.17;  $p < 0.001$ ). The project also found that African-American infants received the greatest benefit, with a five times higher odds of receiving MOM at discharge compared to African-American infants at baseline (OR 5.31, 95% CI 1.71-16.54;  $p=0.004$ ).<sup>16</sup> Acknowledging the social, cultural and environmental factors contributing to this disparity is important when developing and providing culturally appropriate education. NICUs are in an ideal position to provide further education and to support the decision to provide mother's own milk.

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## DOCUMENTATION OF INFORMED CONSENT TO PROVIDE MOM

### **MOM Initiative recommendations:**

- Counsel all high-risk mothers on the benefits of MOM.
- Document a mother's informed decision to provide MOM.

The MOM Initiative recommends counseling high-risk mothers on the benefits of MOM to allow for a fully informed feeding decision to be made. Also, maternal feeding intent should be documented in the electronic medical record (EMR) at prenatal care visits or any hospital admission related to pregnancy. Improvements in EMR software may provide unique locations for documentation, which may facilitate automated reporting. See the toolkit section “Prenatal advocacy and education”.

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## LACTATION ASSESSMENTS

### MOM Initiative recommendations:

- Standardize a process for lactation assessments, including initial assessment within 24 hours of NICU admission for all mothers of VLBW infants.

NICUs with lactation services can choose to include a lactation consult in an existing order set for all VLBW admissions or utilize EMR technology that can pre-populate order sets. Additionally, EMR systems may also be capable of automatically notifying lactation services or providing templates for documentation of critical education points (e.g., pump use, frequency, MOM handling and transportation, maternal feeding intention, risk factors for delayed lactogenesis II, pump access after discharge). Lactogenesis II is defined as an increase in milk volume and maternal perception of breast fullness, it is considered delayed if it occurs after 72 hours.<sup>1</sup> See MOM toolkit [Appendix A](#) for examples of templates to guide lactation assessments.

Lactation support needs can be met by utilizing available NICU resources (e.g., bedside nurses can be trained to perform lactation assessments) or by collaborating with local community agencies. NICUs can advocate for the provision of dedicated lactation staff by using existing recommendations for staffing guidelines of lactation services (see MOM toolkit [Appendix B](#)).<sup>2</sup> See MOM toolkit [Appendix C](#) for guidance for staff with lactation assessments.

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## BREAST PUMPS AND PUMPING ASSISTANCE

### MOM Initiative recommendations:

- Each NICU should designate a responsible provider to be available to assist with expression of mother's own milk.
- The goal for first pumping occurrence is within the infant's 6<sup>th</sup> hour of life.
- Promote the message to “pump early, pump often”, with a minimum of 8 pumping sessions ranging 15-30 minutes long.

Accessibility to a sufficient number of electric breast pumps (hospital and home use) and lactation support staff are key factors for timely pumping initiation and subsequent onset of lactation. This will promote the use of MOM by allowing mothers to have timely access to and assistance with electric breast pumps. Hospital-grade pumps should be easily accessible in areas such as labor & delivery, postpartum units, and NICUs.

### *Breast pumping assistance*

Nursing staff who care for the mothers during their hospitalization are in an ideal position to assist with pumping initiation and support. When mothers are separated from their infants and not able to directly breastfeed, initiation of pumping should occur as soon as possible, ideally within 6 hours of delivery.<sup>1</sup> Mothers of VLBW infants produce significantly more milk throughout the first 6 weeks when pumping is initiated within 1 hour of delivery.<sup>2,3</sup> Mothers should have a minimum of 8 pumping sessions per day for a minimum of 15 minutes and until 2-3 minutes after milk stops flowing. At least one session should be at night. This mimics a term newborn's feeding pattern and provides breast stimulation during the period of natural postpartum elevation in prolactin levels.<sup>4</sup> Additionally, this breast stimulation is critical to support the onset of copious milk production by 72 hours, also known as lactogenesis II. Providing a consistent message of “pump early, pump often” can decrease time to first pumping and increase pumping at night.<sup>4</sup> Use of “hands-on pumping” can help maintain milk supply (see MOM toolkit section “[Maternal Education](#)”).<sup>6</sup>

VON data show that 49% of reporting NICUs do not have dedicated lactation consultant services available, which highlights the importance of utilizing NICU staff nurses to support breastfeeding.<sup>5,6</sup> Spatz's Breastfeeding Resource Nurse (BRN) is an evidence-based model of lactation care that provides staff nurses with targeted education for the use of human milk in the NICU.<sup>7</sup> This on-the-job training specifically supports human milk use and breastfeeding for hospitalized infants while providing staff continuing education credits. Some hospitals use other ancillary staff to assist with breast pumping and lactation-related needs. The Rush Mother's Milk Club is another evidence-based lactation model that utilizes breastfeeding peer counselors for ongoing maternal support in their NICU.<sup>8</sup> These peer counselors are mothers of premature infants who receive specialized education and are able to help new mothers in many ways, including sharing personal experiences.

### ***Access to breast pumps for Mothers whose infants are in the NICU***

During their infant's stay in the NICU, mothers need access to a hospital-grade double electric pump, electric pump kit, and containers for milk storage. The equipment and supply costs associated with provision of MOM are estimated to be lower than donor milk or commercial formula costs.<sup>9</sup> Consider the number of available breast pumps, breastfeeding rates, patient census and NICU resources when estimating equipment and supply needs. It is critical to have continued access to a hospital-grade pump after maternal discharge and while the infant remains hospitalized. Information on local community resources, such as breast pump rental locations, should be easily available to help mothers acquire a hospital-grade pump. The [Florida Breastfeeding Coalition](#), Florida [Healthy Start](#), and [Florida's Special Supplemental Nutrition Program for Women Infants and Children's](#) (WIC) offer breastfeeding support services and resources.<sup>10-12</sup> WIC program referrals can often locate available local loaner breast pumps.

Individual NICUs have also developed their own breast pump loaner programs with the assistance of secretarial or ancillary staff. When breast pumps are loaned to mothers during their infant's NICU hospitalization, there are mechanisms to protect the hospital from financial loss if pumps are not returned (e.g., rental contracts, insurance against loss, loss waivers). The Affordable Care Act now covers the costs associated with breast pumps for mothers whose infants are in the NICU, though it does not specify the type of breast pump.<sup>13</sup> The maternal or infant health care provider should request a hospital-grade double electric breast pump by writing a prescription and/or a letter of medical necessity, which is often an insurance requirement. The National Women's Law Center provides a [tool kit](#) with further explanation of the coverage afforded to lactation services including provision of pumps and templates for letters.<sup>14</sup>

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## BREASTFEEDING EDUCATION FOR STAFF

### **MOM Initiative recommendations:**

- Healthcare providers should be familiar with the AAP and ACOG statements regarding breastfeeding.
- There should be a hospital policy to support breastfeeding.
- Provide breastfeeding education and measure competencies for medical and nursing staff caring for infants and high-risk mothers.

### ***AAP and ACOG opinions***

The AAP statement on breastfeeding and the use of human milk promotes MOM as the preferred feeding substrate for VLBW infants. It provides feeding recommendations for preterm infants, discusses dose-response benefits of breastfeeding, and specific advantages of particular breastfeeding practices.<sup>1</sup> The ACOG Committee Opinion recommends that breastfeeding support be provided in routine obstetric practice, particularly communication regarding the benefits of MOM for premature infants and the importance of discussing the benefits of breastfeeding regardless of the mother's feeding intention.<sup>2</sup> Both of these documents support breastfeeding and use of human milk and should be reviewed and incorporated into daily practice for obstetricians/gynecologists and pediatric providers. The [AAP Sections on Breastfeeding and Perinatal Practice](#), and the [Academy of Breastfeeding Medicine](#) have outlined a hospital breastfeeding policy to provide guidance on optimal breastfeeding practices and support.<sup>3,4,5</sup> A tip sheet with sample questions for the medical team and lactation consultants to ask mothers of VLBW infants can be found in the MOM toolkit [Appendix D](#).

In the U.S., the number of “Baby Friendly” hospitals, which comply with 10 specific steps taken to promote early breastfeeding in healthy term infants, has been growing each year. Currently there is a committee that is attempting to expand these practices to the NICU population.<sup>6</sup> The “Neo Baby Friendly Hospital Initiative” has been championed in Europe and Canada.<sup>6</sup> Adopting the initiative in the U.S. will involve gradual culture change in each facility. The three guiding principles include: individualized attitudes toward each mother's unique situation, provision of an environment supportive of family-centered care, and having a health system that ensures continuity of care from pregnancy until after discharge.<sup>7</sup>

### ***Breastfeeding education and competencies***

The U.S. Surgeon General's “Call to Action to Support Breastfeeding” recommends that all health care providers, especially those who care for women and children, use a standardized approach to support and protect breastfeeding.<sup>8</sup> The United States Breastfeeding Committee (USBC) created “Core Competencies for Breastfeeding Care and Services for all Health Professionals”. This document describes the minimal knowledge, skills, and attitudes that health professionals from all disciplines must have in order to provide patient care that protects, promotes, and supports breastfeeding.<sup>9</sup> They recognize that health professionals who provide secondary or more direct “hands-on” care should have further training and enhanced knowledge and skills regarding the use of human milk and breastfeeding. FPQC recommends review of an educational program that is guided by [Spatz's Ten Steps for Promoting and Protecting Breastfeeding for Vulnerable Infants](#).<sup>10</sup>



Access to a source of accurate and up-to-date information on medications and their transfer into mother's milk allows for individualized decisions regarding the risks and benefits inherent to each clinical situation. The Physician's Desk Reference is not always an accurate source. LactMed is an up-to-date resource from the National Library of Medicine that has information on drugs, their potential effects on lactation, and potential infant adverse effects.<sup>11</sup> LactMed can be downloaded onto smart phones at no cost. Medications and Mother's Milk is another online resource that can be purchased and additionally provides categorization on drug safety for breastfeeding mothers.<sup>12</sup> Another excellent resource, especially for patients, is MotherToBaby, which has fact sheets that answer frequently asked questions about exposures during pregnancy and breastfeeding.<sup>13</sup>

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## MATERNAL EDUCATION

### **MOM Initiative recommendations:**

- MOM should be available within 72 hours of the infant's birth.
- Provide breastfeeding education to mothers on early initiation and recommended frequency of pumping, hand expression, hands-on pumping, use of pump logs, and colostrum or expressed mother's own milk collection

### ***Early initiation of pumping***

Mothers of VLBW infants need timely assistance and support to initiate lactation and establish adequate milk supply. It is important to initiate pumping as soon as possible; ideally within 6 hours of delivery.<sup>1</sup> A key to successfully establishing milk supply is to frequently express milk early-on. Because many VLBW infants do not require large volume feeds in the first days of life and are not able to breastfeed yet, the importance of frequent pumping is not always recognized. This is further complicated by staff who may not understand expected milk volumes at key time points, thereby missing opportunities to intervene early and support breast milk supply. "Pump early, pump often" should be a consistent message that staff provides to mothers of VLBW infants.<sup>2</sup> While hand expression may be effective initially, hospital-grade pumps are recommended for mothers who will be pump-dependent for extensive periods of time.<sup>3</sup> Mothers should pump both breasts simultaneously as this has been shown to increase milk removal, efficiency, and fat content.<sup>4</sup>

### ***Hand expression***

Breastfeeding authorities, such as the Baby Friendly Hospital Initiative, recommend that hand expression and pumping techniques be taught to all nursing mothers who are separated from their infants.<sup>1</sup> Hand expression can be performed independently and should not be painful. Hand expression before and/or after pumping sessions can effectively remove colostrum. Mothers whose infants are in the NICU who did this at least 5 times a day, in addition to pumping, were found to have higher milk volumes than those who only pumped.<sup>5</sup> See [Hand Expression of Breastmilk](#) for detailed hand expression instructions for mothers.<sup>6</sup> In the event of an emergency when electric pumps are not available within 6 hours of delivery, hand expression may be useful as a temporary means of stimulating milk supply. Hand expression *does not* replace the stimulation provided by pumping but may be useful in removal and collection of available drops of colostrum.

### ***Hands-on pumping***

Increasing the effective removal of breast milk is key to supporting optimal milk supply, particularly in mothers with prolonged pump-dependence. Hands-on pumping is used to naturally increase mother's milk supply. Once mothers have achieved a full milk supply, a combination of breast massage and/or hand expression with pumping can assist in fully expressing breast milk, beyond what pumping can accomplish alone.<sup>5</sup> This is important because it maximizes the capacity of the breast to synthesize new milk. As pump-dependent mothers are unable to receive natural feedback at times of expected infant growth spurts, it is

important for them to make active efforts to increase breast milk demand. See [Maximizing Milk Production with Hands On Pumping](#) for detailed hands-on pumping instructions for mothers.<sup>7</sup>

### ***Colostrum***

Increasing access to colostrum is critical to support its use in oral care and trophic feedings for high-risk infants. Colostrum is a powerful antioxidant which contains protective factors that support growth and maturation of the gastrointestinal tract.<sup>8,9</sup> Not only does it have greater concentrations of immunoglobulins, growth factors, and other protective substances than more mature breast milk, but these levels are higher in preterm than term colostrum.<sup>9</sup> The contents of colostrum change over time and are tailored to an infant's postnatal age. As oral care and trophic feedings can be started with even a few drops of colostrum, mothers should be encouraged to collect and store it. Colostrum should be labeled and provided to the infant in the order in which it was collected.

### ***Expressed breast milk***

After colostrum, the use of fresh MOM should be prioritized as it provides the best immunological protection and increased calories compared to frozen MOM. Fresh MOM can be stored for up to 96 hours at 4°C with minimal changes to milk integrity.<sup>10</sup> This allows families who are unable to frequently visit the NICU an opportunity to provide fresh MOM for their infant. Staff should communicate the infant's breast milk needs with mothers on a daily basis to help families in planning. When fresh MOM is not available, frozen MOM should be used in chronological order.

### ***Engorgement***

Lactogenesis II is characterized by increasing milk volume between 30-40 hours after delivery of a full-term infant.<sup>11</sup> Delayed lactogenesis II is lack of maternal perception of breast fullness after 72 hours.<sup>12</sup> This delay may occur in mothers of VLBW infants related to prematurity and may be complicated further by existing risk factors such as obesity and diabetes.<sup>13-16</sup> As milk "comes in", physiological engorgement of the breasts is normal, lasts for less than a week, and can lead to moderate discomfort. Techniques to help prevent engorgement include frequent pumping, hand expression or massage, and warm compresses. Severe engorgement may require cold compresses to decrease swelling and allow for effective milk removal. Engorgement that is very painful or which lasts more than a week should be evaluated as it can lead to decreased milk supply and other complications (e.g., plugged duct, mastitis) if it is not relieved. Health care providers should ask mothers about signs of mastitis (e.g., fever, flu-like symptoms, tenderness, localized warmth or tenderness) and make appropriate referrals as needed.

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## APPROPRIATE BREASTFEEDING SUPPLIES

### **MOM Initiative recommendations:**

- Standardize a process to ensure appropriate supplies are available to support and facilitate breastfeeding and provision of expressed mother's own milk in the NICU.

Appropriate education, maternal involvement, and availability of breastfeeding equipment and supplies are vital to successful establishment of milk supply and appropriate human milk management.

### ***Double electric pumps***

As frequent, long-term pumping is often required to maintain supply for VLBW infants, mothers should have a hospital-grade, double electric pump. These are more durable and can pump milk at higher pressures than other pumps.<sup>1</sup> A double electric pump can allow for both breasts to be pumped at once and studies show that it helps mothers to produce more milk in less time.<sup>2</sup> Manual, battery-operated, or single breast pumps are more ideal for occasional milk relief.

### ***Breast shield flanges, nipple shields and storage containers***

A complete pumping kit should include tubing, breast flanges in various sizes, and a starter set of collection bottles.<sup>1</sup> It is very important that the breast shield flange be the correct size and fit. A poor fit can cause breast tissue damage and compromise milk production.<sup>3</sup> Available flange sizes are: 24 mm, 25 mm, 27 mm, 30 mm, and 36 mm. While the standard size commonly offered is 24 mm or 25 mm, mothers should be reassessed for flange fit and comfort at the infant's 3<sup>rd</sup> day of life (i.e., when increasing breast fullness is first noted) and as needed. Similarly, during transition to breastfeeding, providers should evaluate need for a nipple shield. Commonly available nipple shield sizes are: 16 mm, 20 mm, and 24 mm. To accommodate the incremental feedings of premature, VLBW, or other high-risk infants, milk should be stored in storage containers comparable to the expected feeding volume. Therefore, containers in various sizes should be provided (e.g., 11ml, 35 ml, 80 ml, 250 ml). Mothers with robust milk supplies will require larger storage containers to provide composite milk and prevent inadvertently separating foremilk and hindmilk.

### ***Supplemental nursing systems***

A supplemental nursing system particularly benefits mothers with low milk supply who intend to breastfeed. It consists of a reservoir containing a supplement (e.g., expressed human milk, formula) with thin tubing that is taped to the mother's breast and nipple thereby allowing the infant to receive the supplementation when latching to the breast. If there is effective latching, the infant receives the immediate reward of faster milk flow and may receive additional milk as needed. It is important to assess latching during this process because without a good seal, there will not be good milk transfer from the supplemental nursing system. The system's flow may be controlled to support the infant's needs.

### ***Cleaning and sterilization***

Mothers should wash their hands prior to pumping and touching breast pump parts. Pump parts and nipple shields should be washed after each use with mild dishwashing soap, and sterilized once a day following manufacturer's recommendations. Pump parts can be put in boiling water for 10 minutes or a microwavable, reusable bag can be used to sterilize the parts daily. The bag and microwave should be easily accessible to promote appropriate cleaning. The supplemental nursing system should be cleaned after each use with mild dishwashing soap and manufacturer's recommendations should be followed.

### ***Refrigerator and freezers***

Temperatures should be regularly monitored with refrigerator temperatures maintained at or below 4°C (39°F) and freezer temperatures at or below -17°C (4°F).<sup>4</sup> Temperatures should be recorded on an ongoing basis and a quality assurance program should be in place. Freezers for long-term storage should be free-standing because they have better quality control.<sup>5</sup> To help prevent misadministration of human milk, each mother should have a separate storage area within the refrigerator or freezer organized with clearly labeled bottles. Correct labeling is essential for patient safety and each bottle should have the infant's printed label noting the pumping session, date, and time. Mothers should be encouraged to label bottles of colostrum in chronological order so that it can be provided in this order for oral care and trophic feedings.

### ***Test weights***

As the infant transitions to breastfeeding, it may be helpful to objectively monitor consumed milk volume with test weights using a precise digital scale. Scales should be calibrated for accuracy within 5 grams for VLBW infants, and within 1 gram for infants weighing less than 1,000 grams.<sup>6</sup> Scale design and size should match the space available in the NICU or around the infant's bedside. The correct technique to perform test weights is to obtain accurate pre- and post-weight measurements around a breastfeeding session.<sup>7</sup> Both weights should be taken on the same scale, with the same clothes, and no change of the infant's diaper. Monitor leads should be disconnected during weighing. The difference in pre- and post-weight allows estimation of milk transfer during the breastfeeding session. See the [MOM online Toolbox](#) example tools and forms to download sample NICU test weight guidelines.

### **Essential Supplies Checklist:**

- ✓ Hospital-grade electric breast pumps
- ✓ Double electric breast pump kits
- ✓ Various breast shield flanges for pumping (24 mm, 25 mm, 27 mm, 30 mm, 36 mm)
- ✓ Refrigerators and freezers for milk storage
- ✓ Mild dishwashing soap
- ✓ Microwave steam bags for daily sterilization
- ✓ Milk storage containers (11 ml, 35 ml, 80 ml, 250 ml)
- ✓ Nipple shields of various sizes (16 mm, 20 mm, 24 mm)
- ✓ Digital scale with accuracy within 1–5 grams

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## MONITORING MILK SUPPLY

### **MOM Initiative recommendations:**

- Standardize a process to monitor MOM supply, particularly on days of life 3, 7, and 14.
- Medical and nursing providers should review mothers' pumping logs routinely.

Establishing and sustaining a full milk supply is critical to assure access to MOM for the VLBW infant during hospitalization. It also supports optimal breastfeeding and human milk practices. Mothers of VLBW infants have a higher risk of low milk supply because they are pump-dependent for extensive time periods and may have underlying chronic health conditions that affect milk supply.<sup>1</sup> Some mothers may be at their personal milk-making capacity and will not achieve full volume even after lactation assessment and targeted interventions. Other mothers may benefit from use of galactagogues, but initiation of this requires a medical evaluation for potential risks and benefits for both the mother and infant. While the medical team should prioritize MOM feedings, they may need to consider alternative feeding options if an infant's need exceeds maternal supply. All mothers should be thanked for their work and efforts to provide MOM for their high-risk infant.

NICU staff should assess mother's milk supply at the following critical time points: days of life 3, 7 and 14.

### ***Critical time point: Day of life 3***

At day of life 3, mothers should start experiencing breast fullness and increased milk volume. Mothers of VLBW infants are at risk for a delay and should be followed closely with review of her pumping log. Mothers need to be assessed for pumping effectiveness, flange size, and prevention of engorgement. Pumping instructions should be focused on effective removal of available milk with mothers pumping for approximately 30 minutes or 2-3 minutes after milk-spray into the storage container stops. Mothers can expect to express a minimum of 30 ml per day during this time period.

### ***Critical time point: Day of life 7***

At day of life 7, mothers should be "coming to volume" and establishing a full milk supply. Full milk supply in the range of 440-1220 ml/day has been documented for healthy, term infants up to 6 months of age.<sup>1</sup> A minimum milk volume target for mothers of preterm infants is 500 ml per day by day of life 6-10.<sup>2</sup> <sup>3</sup> Daily milk production should be monitored until a milk volume of > 500 ml per day is achieved. It is important to identify those mothers who do not reach this goal, as they are at risk for lactation failure and should receive early intervention. Counseling should evaluate pumping effectiveness and address individual factors that may be affecting milk supply. NICU staff should assess pumping logs frequently, particularly in the first 2 weeks of lactation, to support milk supply and to assure infant's access to MOM. This can be done as part of routine nursing reports and incorporated into medical rounds. See MOM toolkit [Appendix D](#) for examples of questions and tips that can be used by the medical team.



### ***Critical time point: Day of life 14***

At 2 weeks, a mother's pumping effectiveness and flange size should be re-evaluated. Reviewing the pumping log is critical to assist mothers in making decisions to best support their milk supply. Pumping frequency and guidance should be tailored depending on maternal milk volume. Milk composition and volume from mothers of infants less than 28 weeks gestation often do not reach the expected goal of 750 ml per day by 14 days, even with lactation support provided during the study period.<sup>4</sup> A milk volume of 500 ml per day may require continued pumping at minimum 8 times per day to support this supply. A mother with a robust milk supply of 1,000 ml per day may be able to lower total pumping sessions and still maintain her supply. See MOM toolkit [Appendix C](#) for the Lactation Assessment Grid to Support Maternal Milk Supply and Breastfeeding, which provides guidance on critical time points to support mothers of VLBW infants.

### ***Pumping log***

One of the best ways to prevent low milk supply is to support frequent and effective pumping and closely monitor milk supply until mothers achieve full volume. Pumping logs are designed to encourage mothers to pump their own milk and assist in developing a specific pumping routine. Consider having 2 pumping logs available. One log can be used during week 1, when early and frequent pumping is very important to establish milk supply. A second log can be used thereafter to support maintenance of milk supply. Mothers should be encouraged to review their logs with NICU medical and nursing staff, particularly the total pumping sessions and total volume expressed. They should understand their expected milk volume goals and be encouraged to ask for assistance if they are not reaching them. See MOM toolkit [Appendix E](#) for an example of a pumping log.

### ***Maintaining milk supply***

Milk volume is regulated by supply and demand. Early and frequent pumping is critical to maximize milk volumes, establish a full milk supply, and stimulate lactation hormones. All efforts to provide expressed breast milk for an infant should be applauded. Mothers should understand the multiple benefits of colostrum. They should expect only drops of colostrum to initially be expressed and this should be saved for the infant's oral colostrum care or trophic feedings.

Skin-to-skin care can also help maintain milk supply and condition let-down reflexes. Once the infant is clinically stable, skin-to-skin care should be encouraged.<sup>5</sup> For the mothers who intend to breastfeed, practicing non-nutritive suckling provides breast stimulation and should be encouraged for infants who are not yet ready to breastfeed. See the [MOM online Toolbox](#) example tools and forms to download sample skin-to-skin care and non-nutritive suckling guidelines.

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## STANDARDIZED BREASTFEEDING GUIDELINES

### **MOM Initiative recommendations:**

- Standardize guidelines for skin-to-skin, oral care, nutritive and non-nutritive breastfeeding, use of nipple shields and test weights, discharge feeding plan, and breastfeeding support.

### ***Skin-to-skin care***

Evidence suggests that skin-to-skin contact, also known as kangaroo care, promotes an infant's physiologic and temperature stability and sleep-wake cycles, reduces stress and pain, and allows mother's milk to be readily available.<sup>1</sup> Skin-to-skin contact should start as soon as the infant and mother are physically able, and should continue as often as possible during the admission. This will promote maternal-child attachment and support transition to breastfeeding. Skin-to-skin holding involves placing a naked infant prone on the mother's bare chest. Ludington Hoe et al. published a clinical guideline that can be used in stable infants over 30 weeks gestation and includes detailed steps on policy development and lists 10 steps to implementation in the NICU.<sup>2</sup> See the [MOM online Toolbox](#) example tools and forms to download sample skin-to-skin guidelines.

### ***Oral care***

Oral care using colostrum or fresh mother's milk is a safe and feasible intervention which can potentially serve as immune therapy in infants who are not receiving oral feeds. Absorbing immunologic factors from mother's milk through the oral mucosa promotes development of a protective gut immune barrier, and is important for immune development.<sup>3-5</sup> Oral care is often included in care bundles to prevent ventilator-associated pneumonia.

To ensure colostrum is utilized for oral care and initial feedings, mothers should label bottles of expressed mother's milk in order of pumping session. Healthcare providers should use this expressed mother's milk in chronological order and assist parents in administering oral care for their infant. This has been identified as a maternal motivator to continue pumping despite having a high-risk infant who had a prolonged period of no enteral feedings.<sup>6</sup> See the [MOM online Toolbox](#) example tools and forms to download sample oral care guidelines.

### ***Nutritive and non-nutritive breastfeeding***

Research supports infants initiating breastfeeding when physiologically stable, though infants less than 32 weeks post-conceptual age may require additional time to completely transition to direct breastfeeding. Clinical practice recommendations include early and frequent skin-to-skin contact, as well as cue-based breastfeeding.<sup>7</sup> This requires mothers be easily and frequently available for their infant, which can be limited by transportation issues or when mothers are required to return to work. These issues should be addressed with individual mothers in order to support a mother's breastfeeding goals. Further research is needed on feeding protocols that support early initiation of breastfeeding for VLBW infants as well as full direct breastfeeding.

Very preterm infants have the capacity for early development of breastfeeding using non-nutritive breastfeeding or “dry” breastfeeding, whereby infants are put to an “emptied” breast.<sup>8</sup> This process can help mother and infants as they transition from skin-to-skin care to nutritive breastfeeding. It allows the infant to stimulate the mother’s breasts while protecting them from a rapid flow of milk before they have an established suck-swallow-breathe pattern.<sup>9</sup> It allows the mother to practice positioning and latching without having to worry about the infant’s intake. Non-nutritive breastfeeding improves mother’s milk supply and duration of breastfeeding post-discharge.<sup>10</sup> Infants may simultaneously gavage-feed during this process. See the [MOM online Toolbox](#) example tools and forms to download sample non-nutritive breastfeeding guidelines.

### ***Nipple shields and Test Weights***

Nipple shields can facilitate latching in premature infants who are unable to maintain regular nutritive sucking or when mothers have flat or inverted nipples.<sup>11</sup> A lactation assessment helps provide appropriate nipple shield size and support until the infant is able to effectively breastfeed. Nursing staff should receive education on the use of nipple shields and be able to initiate their use.

Test weights can be used to accurately evaluate milk transfer after nutritive breastfeeding, particularly when transitioning to cue-based feeding.<sup>12</sup> It is often difficult for caregivers to accurately determine the volume of milk transfer during a breastfeeding session by observation or by using a scoring system.<sup>13</sup> Inexperienced breastfeeding mothers or healthcare staff who do not routinely observe and evaluate feedings find this even more difficult.

See the [MOM online Toolbox](#) example tools and forms to download sample nipple shield and test weight guidelines.

### ***Infant discharge feeding plan and recommended follow-up***

The infant’s home feeding plan should be initiated before NICU discharge to ensure its feasibility and effectiveness for both the infant and family. Mothers should be given ample opportunity to breastfeed during the NICU admission. Practices such as rooming-in and transitioning to cue-based feedings can support breastfeeding and improve maternal confidence. Consideration of MOM supply and infant’s intake is critical to provide individualized pumping instructions, support maternal milk supply, and transition to breastfeeding at home. Some mothers may continue to be pump-dependent to support their milk supply and should have access to a hospital-grade pump during the transition to direct breastfeeding. Consultations with lactation consultants and registered dietitians to evaluate the discharge feeding plan, assess growth, and optimizing MOM use are important. Ideally, the discharge feeding plan should be discussed with the infant’s pediatrician. It is important to provide families with contact information for community breastfeeding services and support at subsequent pediatric appointments. An example of a “NICU graduate nutrition discharge plan” is available at the California Perinatal Care Collaborative’s website.<sup>14</sup>

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## APPENDICES

### APPENDIX A: TEMPLATE FOR LACTATION ASSESSMENT NOTES

#### Initial lactation note

NICU infant: Gestational Age: \_\_\_\_\_. First pumping (< 6 HOL, >6 HOL, >6 HOL medical issue)

Mother instructed to hand express and use (Specify Pump Mode).

Maternal Risk Factors for Delay in Milk Production:

(First time mother, maternal age over 30, obesity, gestational diabetes, diabetes, PIH, HELLP, magnesium sulfate, PCOS, antenatal steroids, retained placenta, severe postpartum hemorrhage, prolonged labor & delivery/interventions, breast surgery, glandular hypoplasia)

Mother educated regarding: breast pumping technique and frequency (8x day and at least 1x night), cleaning of breast pump equipment, storage and transportation of expressed breast milk. Mother provided with bottles and newborn labels.

Feeding Intention: \_\_\_\_\_ (breastfeeding, breast and formula feeding, expressing breastmilk, formula feeding). This should be modified to reflect maternal choice.

Hospital-grade breast pump provided at discharge (YES/NO). If a pump is provided, identify pump type and source of the pump (choices will vary depending on availability, personal pump, WIC, loaner program, rental information)

(WIC) county: \_\_\_\_\_ referral done for pumping needs and support.

Current maternal medications reviewed and potential contraindications related to breastfeeding discussed. Maternal medications include:

Mother encouraged to contact lactation services/NICU with questions or concerns related to breast pumping.

RN updated.

#### NICU Follow-up Notes

Mother instructed to hand express and use (specify pump mode if needed)

Reinforced hands-on pumping technique/frequency with at least 8 pumping sessions per day and x1 at night (milk supply > 500 ml in 24 hours by 7 days of life).

Day of Life: \_\_\_\_\_ (This info may be electronically updated or written in) current 24 hour milk supply at (< 500 ml, > 500, > 750 ml, > 1,000 ml)

Recommendations:

## **APPENDIX B: GUIDELINES FOR LACTATION CONSULTANTS IN PERINATAL UNITS**

The Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN) provides specific recommendations for lactation consultants in their Guidelines for Professional Nursing Staff for Perinatal Units (2010). AWHONN also recommends the availability of lactation consultants seven days a week to assist with complex breastfeeding issues. They provide calculations per 1,000 births for lactation staffing for various levels of perinatal health centers. These are listed below and can be used by institutions to appropriately staff lactation consultants at perinatal health centers:

- A. 1.9 full-time equivalent lactation consultants are recommended for every 1,000 births based on annual birth volume in Level III perinatal centers
- B. 1.6 full-time equivalent lactation consultants are recommended for every 1,000 births based on annual birth volume in Level II perinatal centers
- C. 1.3 full-time equivalent lactation consultants are recommended for every 1,000 births based on annual birth volume in Level I perinatal centers

**APPENDIX C: LACTATION ASSESSMENT GRID TO SUPPORT MOM AND BREASTFEEDING**

Critical time points & assessments	Rationale & teaching points
<p><b>Counsel mothers who are at high-risk or whose infants are in the NICU and any VLBW NICU admissions</b> (when breastfeeding is not contraindicated).</p>	<ul style="list-style-type: none"> <li>• Use the flip chart to counsel and document an informed infant feeding decision.</li> </ul> <p style="text-align: center;"><b><i>“Colostrum or MOM is medicine for your infant!”</i></b></p>
<p><b>Goal to initiate pumping is &lt; 6 hours of delivery</b></p>	<ul style="list-style-type: none"> <li>• Only expect drops of colostrum.</li> <li>• Encourage parents to bring colostrum to the NICU for oral care and trophic feedings.</li> </ul> <p style="text-align: center;"><b><i>“Pump early, pump often!”</i></b></p>
<p><b>Mothers should pump at least 8 times per day (1 session at night) for at least 15 minutes.</b></p>	<ul style="list-style-type: none"> <li>• Label colostrum and feed in chronological order when initiating feeds.</li> <li>• Use hand-expression after pumping to help remove colostrum.</li> <li>• Recommend use of a hospital-grade pump to establish milk supply.</li> <li>• Provide resources and assistance for a home breast pump.</li> </ul>
<p><b>MOM should be available by day of life 3, with a goal of &gt;30 ml per day.</b></p>	<ul style="list-style-type: none"> <li>• Pumping instructions should focus on effective removal of available milk.</li> <li>• Pumping should continue for 2-3 minutes after milk spray stops.</li> <li>• Total pumping goal for each session is 30 minutes.</li> <li>• Closely monitor mothers with significant risk factors for low milk supply.</li> <li>• Assess pumping effectiveness, flange size, pumping frequency, review pumping logs, and prevention of engorgement.</li> </ul>
<p><b>Goal for mother’s milk supply at day of life 7 is &gt;500 ml per day.</b></p>	<ul style="list-style-type: none"> <li>• <b><i>Monitor daily milk production until milk volume is &gt;500 ml per day. A robust milk supply is at 750-1,000 ml per day.</i></b></li> <li>• Mothers need to "come to volume" in order to support exclusive MOM during NICU stay.</li> <li>• Goal is for each mother to reach their maximum milk-making capacity and meet their individual goals.</li> <li>• Encourage massage after initial pumping session. Also, mothers may pump again or use hands-on pumping technique to remove available milk.</li> <li>• Closely monitor mothers with significant risk factors for low milk supply.</li> <li>• Assess pumping effectiveness, flange size, pumping frequency, review pumping logs and prevention of engorgement. Tailor pumping frequency and instruction depending on maternal milk volume.</li> </ul>
<p><b>Encourage skin-to-skin or kangaroo care.</b></p>	<ul style="list-style-type: none"> <li>• Nurses should try to coordinate skin-to-skin care with mother or family members when the infant is clinically stable.</li> </ul>



	<ul style="list-style-type: none"> <li>• Skin-to-skin care should be done with the mother or family members daily or as tolerated by the infant.</li> </ul>
<p><b>“Non-nutritive suckling” (NNS) should be encouraged</b> (if mother intends to breastfeed).</p>	<ul style="list-style-type: none"> <li>• Mother should pump prior to holding her infant skin-to skin. During skin-to-skin care, the infant should be allowed to suckle at the “emptied” breast.</li> <li>• NNS can be done before or after gavage feeding.</li> <li>• Pumping after NNS can provide added stimulation and boost milk supply.</li> </ul>
<p><b>Transition infant to nutritive breastfeeding</b> (if mother intends to breastfeed).</p>	<ul style="list-style-type: none"> <li>• Nurses should try to coordinate breastfeeding attempts with mother as tolerated by the infant.</li> <li>• Attempt oral feedings at the breast prior to routine introduction of bottles.</li> <li>• Use a test-weight scale to estimate breast milk transferred during a breastfeeding session. This can be documented in the inputs/outputs with 1 gram equivalent to 1 ml.</li> <li>• Teach mothers infant feeding cues and promote breastfeeding on cue, as mother is available and infant is able.</li> </ul>
<p><b>Prepare mother for discharge. Ensure appropriate breastfeeding resources and follow-up are available.</b></p>	<ul style="list-style-type: none"> <li>• Infant’s home feeding plan should be initiated in the NICU to determine feasibility for infant and family, as well as to ensure appropriate weight gain.</li> <li>• Ensure mother has continued access to a breast pump after her infant is discharged home.</li> <li>• Provide breastfeeding community resources to mothers prior to discharge.</li> </ul>

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**APPENDIX D: QUESTION TIP SHEET FOR STAFF TO SUPPORT MOM IN THE NICU****Initially**

- \* Do you have a hospital-grade electric pump for home use?
- \* Are you pumping at least 8 times per day?
- \* Are you experiencing any breast discomfort?

***“Please bring in any drops you are able to express. Thank you for providing colostrum or MOM!”***

**First week**

***Follow daily milk volume until mothers achieve 500 ml/ day***

- \*By day 7, are you producing at least 500 ml (16-17 oz) per day?
- \*What is your total volume of expressed milk in 24 hours?
- \*Your infant is feeding \_\_\_ ml /day.
- \*Have you held your infant skin-to-skin?
- \*Are you experiencing any breast discomfort?

***“Pumping is hard work. You are doing a great job pumping milk for your infant!”***

**Continued support**

- \*Are you producing at least 500 ml (16-17 oz) consistently per day?
- \*What is your total volume of expressed milk in 24 hours?
- \*Are you experiencing any breast discomfort?
- \*Your infant is feeding \_\_\_ ml /day.
- \*If you intend to directly breastfeed, have you practiced breastfeeding (nutritive or non-nutritive)?
- \*Have you thought about how you intend to feed your infant at home after discharge?

***“Thank you for continuing to provide MOM for your infant!”***

***“Please let us know if you are not making at least 500 ml (16-17 oz) per day.”***

## APPENDIX E: MATERNAL EDUCATION ON MOM COLLECTION, STORAGE, TRANSPORT & PUMP CLEANING

Pumping is used to establish your milk supply and to assist NICU staff in providing your infant expressed milk. MOM is medicine for your infant! If you intend to breastfeed we can help you when your infant is ready. Breastfed infants nurse frequently, often 8-10 times per day. You will need to pump as frequently, mimicking what your infant would if he/she was nursing. Along with pumping, gentle breast massage and hand expression will often encourage a milk-ejection reflex (let-down) and increase your milk flow. In addition, kangaroo care (holding infant skin-to-skin) has been shown to increase the amount of milk expressed. We encourage you to hold your infant skin-to-skin as soon as possible.

- 1) Wash hands prior to expressing milk.
- 2) Pump every 2-3 hours, and at least once during the night. Pump at least 8 times a day, per 24-hour period. A MOM's pumping log can be used to help you keep track of number of times you pump, and the amount of milk you are getting. You should pump both breasts at the same time. Initially, you will need to pump for about 15 minutes, and as your milk supply increases (usually after the 3<sup>rd</sup> day) you should continue to pump until 2-3 minutes after you no longer see milk spraying (usually 20-30 minutes).
- 3) Express your milk into the storage bottles provided by the hospital. Ask staff how to mark your colostrum to help identify it and provide it to your infant for initial feeds and oral care. Record the date and time on the label being careful not to write in the bar code area. Place this sticker on the bottle as directed.
- 4) Place milk from only one pumping into each container. If your milk production is large, you may need to divide some of your milk into separate ½ to 1-ounce containers in order to avoid wasting any milk when thawed. Ask for as many bottles as you think will need to cover your milk production until you are able to visit again.
- 5) Please wash pump parts that come in contact with expressed milk using mild soap and water after every use. It is recommended to disinfect your pump parts once daily. Please ask staff for specific instructions.
- 6) Bring your chilled or frozen milk to the nursery each time you visit, and give the expressed milk to the NICU staff as soon as you arrive. The bottles will be placed in the labeled refrigerator or freezer bins for your infant. After providing colostrum, your fresh milk is best. Please ask the nursing staff for specific instructions.

The amount of milk you express will vary. This can depend on the age of your infant, the time of day, and your stress level. Your milk will also vary in color and consistency. Remember, the key factor in milk production is frequent and effective removal of available milk. The more often you breastfeed or pump, the more milk you will produce. You may want to massage your breast prior to pumping. Try to relax by focusing on your breathing. ***Think positive thoughts about your infant, and know that you are doing a wonderful thing for your infant and yourself!***

**APPENDIX F: MOM PUMPING LOGS**

**Pumping log Week #1**

Session	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
<b>Goal: ≥8/day</b>	<b>Drops...</b>		<b>Increasing milk volumes</b>				<b>&gt;500 ml/day</b>
1							
2							
3							
4							
5							
6							
7							
8							
<b>DAILY TOTAL</b>							

**Pumping checklist**

- ✓ Have milk storage containers easily available.
- ✓ Dim the lights, turn on soft music, or keep a picture of your baby visible.
- ✓ Wash your hands.
- ✓ Sit in a comfortable position and area.
- ✓ Use relaxation techniques, such as consciously slowing your breathing and thinking about your baby.
- ✓ Apply warm compresses to your breasts and massage your breasts prior to pumping.
- ✓ Pump at least 8 times a day for 15 minutes. As milk supply increases, you should pump until 2-3 minutes after your milk stops flowing, which may be approximately 30 minutes. Record the time you spent pumping and the milk volume pumped.
- ✓ By the 7<sup>th</sup> day, please consult your NICU nurse or lactation consultant, if your milk supply isn't increasing or if your 24-hour milk supply is not >500 ml (16-17 oz).
- ✓ To increase your milk supply, consider hand expression in addition to pumping (video: <http://newborns.stanford.edu/Breastfeeding/HandExpression.html>).
- ✓ Please discuss any nipple or breast discomfort with your NICU nurse or lactation consultant.

**Pumping log Week #2**

Session	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14
<b>Goal: ≥8/day</b>	<b>Goal: &gt;500 ml/day</b>						
1							
2							
3							
4							
5							
6							
7							
8							
<b>DAILY TOTAL</b>							

**Pumping checklist**

- ✓ Have milk storage containers easily available.
- ✓ Dim the lights, turn on soft music, or keep a picture of your baby visible.
- ✓ Wash your hands.
- ✓ Sit in a comfortable position and area.
- ✓ Use relaxation techniques, such as consciously slowing your breathing and thinking about your baby.
- ✓ Apply warm compresses to your breasts and massage your breasts prior to pumping.
- ✓ Pump until 2-3 minutes after your milk stops flowing, which may be approximately 30 minutes. Record the time you spent pumping and the milk volume pumped.
- ✓ If 24-hour milk supply is <500 ml (16-17 oz), please consult your NICU nurse or lactation consultant.
- ✓ Hands-on pumping may help support and maintain a good milk supply. (video: <http://newborns.stanford.edu/Breastfeeding/HandExpression.html>).
- ✓ Please discuss any nipple or breast discomfort with your NICU nurse or lactation consultant.

# Florida Perinatal Quality Collaborative



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