

Breastfeeding in the NICU Toolkit



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Breast Milk in the Neonatal Intensive Care Unit

June 2023

Guideline: Breast Milk in the NICU

Purpose: To promote, support, and maintain breast milk use and breastfeeding in the Neonatal Intensive Care Unit (NICU)

Points of Emphasis:

- Breast milk use in the NICU is a priority to ensure optimal health outcomes for preterm or ill neonates
- Additional system strategies are needed to support mothers in producing an adequate milk supply
- Skin-to-skin care and breastfeeding attempts should be encouraged when physiologically and developmentally appropriate

Background:

The NICU presents unique challenges to breastfeeding mothers and the clinicians and hospital systems who support them. Breast milk use should be encouraged and supported due to the multiple benefits for NICU infants, especially Very Low Birth Weight (VLBW) neonates (Parker, et. al., 2021). These benefits include decreased incidences of

- Necrotizing enterocolitis
- Retinopathy of Prematurity
- Chronic Lung Disease
- Late Onset Sepsis
- Neurodevelopmental Impairment

The Neo-Baby Friendly Hospital Initiative (Nyqvist, et al., 2012) offers three guiding principles for clinicians to support breastfeeding and breast milk use in the NICU:

- Staff attitudes towards the mother must focus on the individual mother and her situation
- The facility must provide family-centered care, supported by the environment
- The healthcare system must ensure continuity of care from pregnancy to after the infant's discharge

The remainder of this clinical practice guideline will describe and offer practical advice.

Prenatal Consult

- Establish agreed upon indications for prenatal consults with OB
 - Create order set that automatically generates a NICU consult based on guidelines
 - Decide how Neonatology will be notified of the consult (e.g., during huddle, charge nurse, OB clinician communication)
 - Review the following topics during the consult:
 - Benefits of breast milk
 - Provide educational resources, such as a QR code, educational brochure, or business card **Appendix C**
 - Breastfeeding plans and any barriers to breastfeeding so they can be addressed preemptively
 - When and how to express breast milk after delivery
 - Create a prenatal consult note template with breastfeeding talking points to promote consistency in the message and education delivered to mothers
 - Ensure there is breastfeeding-friendly signage and items in room
 - Remove the formula-sponsored crib cards, tape measures, etc.
- **Show mothers how to initiate and maintain lactation**

Milk Expression

- General considerations
 - Identify
 - Where mom is pumping after delivery (L&D, PACU, Post-partum)
 - Who is responsible for delivering pump and demonstrating how to use it
 - Remember the transported infant
 - Home hospital: Remember to have mom pump so milk can be delivered to her baby
 - Transport team: Remember to provide instructions to mom about milk expression and delivering milk to referral NICU
- Timing and frequency
 - Encourage early expression of breast milk, ideally within 1-2 hours of birth to improve breast milk supply (Andrejko, 2020)
 - Express milk 8-12 times per day with a goal of >500 ml/day by Day 14 (Parker et al., 2021)

Table 1: Neo-Baby Friendly Hospital Initiative for Neonatal Wards

1. Have a written BF policy that is routinely communicated to all healthcare staff
 2. Educate and train all staff in the specific knowledge and skills necessary to implement
 3. Inform hospitalized pregnant women at risk for preterm delivery or birth of a sick infant about the benefits of breastfeeding and the management of lactation and breastfeeding
 4. Encourage early, continuous, and prolonged mother-infant skin-to-skin contact/Kangaroo mother care
 5. Show mothers how to initiate and maintain lactation, and establish early BF with infant stability as the only criterion
 6. Give newborn infants no food or drink other than breastmilk, unless medically indicated
 7. Enable mothers and infants to remain together 24 hours a day
 8. Encourage demand BF or, when needed, semi-demand feeding as a transitional strategy for preterm and sick infants
 9. Use alternatives to bottle feeding at least until BF is well established, and use pacifiers and nipple shields only for justifiable reasons
 10. Prepare parents for continued BF and ensure access to support services/groups after hospital discharge
-

Management Approach

- **Inform pregnant women of the benefits of breastfeeding**

Antenatal Visits

- Obstetrical clinicians should counsel expectant mothers on the benefits of breastfeeding.
 - OB counseling improves breastfeeding initiation, especially in populations who are traditionally less likely to breastfeed, e.g., low income, young, and mothers with lower education (Lu et. al., 2001).
- Formula-sponsored materials should be removed from prenatal visit areas
 - Mothers who received formula sponsored material prenatally were more likely to discontinue breastfeeding prior to hospital discharge and before two weeks compared to mothers who did not receive formula-sponsored materials (Howard et al., 2000).

- Hand expression
 - Please view the following video for demonstration of hand expression:
<https://med.stanford.edu/newborns/professional-education/breastfeeding/hand-expressing-milk.html>
- Mechanical pumping
 - Select correct phalange size using COMFY (**Appendix B**)
 - **C**-Nipple centered, moves freely
 - **O**-Only minimal areolar tissue in the tunnel
 - **M**-Motion is gentle and rhythmic
 - **F**-Feels comfortable
 - **Y**-Yields an empty breast
- Ongoing milk expression
 - Identify where mom can express her milk (e.g., bedside in NICU, another dedicated space)
 - Accommodations to promote success
 - 24-hour access
 - Private, peaceful
 - Opportunity for education, social connections, and peer support
- **Encourage early, continuous, and prolonged mother-infant skin-to-skin contact**
Skin-to-skin care (**Appendix C**)
 - Benefits for infants
 - Facilitates access to breast and increases production of human milk
 - Prevents hypothermia by warm transfer from mother to child
 - Improves and/or maintains stability even in very preterm infants
 - Heart and respiratory rate show lower variation such as oxygen saturation, and episodes of apnea and bradycardia are reduced
 - Reduces stress, decreasing cortisol release during session
 - Improves brain maturation positively affecting infants' sleep patterns
 - Improves neurobehavioral and psychomotor development

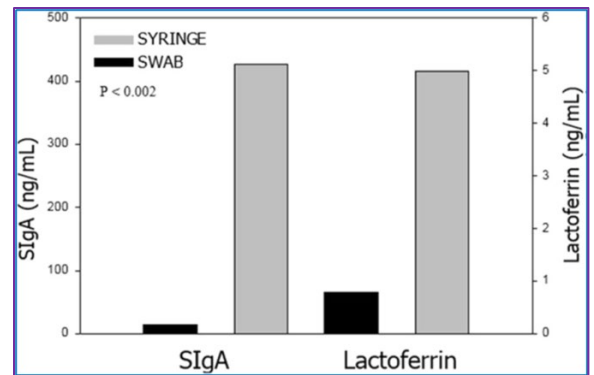
- Decreases pain response in preterm infants during painful procedures
 - Stabilizes weight loss
- Considerations
 - Parents should perform at least 1 hour of SCC per session
 - No heavy perfumes; clothing with buttons or zipper in the front preferred
 - At least two nurses should be present for the transfer of an infant receiving respiratory support (CPAP or invasive ventilation)
 - Secure tubing to parent
 - Ensure water in tubing is draining away from infant
 - Check heart rate, respiratory rate, oxygen saturation, and temperature before and 15 minutes after transfer
- **Give newborn infants no food or drink other than breastmilk, unless medically indicated**

Colostrum for Mouth Care

- Pre- and probiotics found in mother’s colostrum combined with the infant’s saliva creates an oral environment that promotes the growth of healthy bacteria. The oral microbiota then colonizes the rest of the GI system.
- Procedure
 - Instill 0.1 ml of colostrum to each buccal cavity every 2 hours
 - Use syringe instead of a swab for improved levels of SIgA and Lactoferrin
 - Encourage parents to participate in this care



Standardized Feeding Regimen



Maffei, D., Brewer, M., Codipilly, C., Weinberger, B., & Schanler, R. J. (2020). Early oral colostrum administration in preterm infants. *Journal of Perinatology*, 40(2), 284-287.

- Develop a standardized feeding regimen. Components should include:
 - Mom’s own milk is preferred (unless known contraindication)
 - Rate of advancement & time of day to advance
 - Addition of fortifiers at specified total fluid threshold
 - Decide whether to use human milk-based fortifier vs. cow milk-based fortifier
 - Timing of removal of central lines at specified fluid volume
- Donor breast milk
 - Determine who qualifies to receive it
 - Determine when to wean and transition to formula if mother’s own milk is not available
- Informal milk sharing is discouraged due to the possibility of unknown infectious conditions, herbal supplements, medications, and potential for altered contents (Daniels et al., 2017).

Breast Milk and Medication Resources

- Trash the Pump and Dump (TPD)
 - <https://trashthepumpanddump.org>
 - Reviews medical conditions, medications, and substances of concern during lactation
- LactMed Database
 - <https://www.ncbi.nlm.nih.gov/books/NBK501922/>
 - Information on drugs and other chemicals, adverse effects, and exposure to breastfeeding people
- Infant Risk Center
 - <https://www.infantrisk.com/category/breastfeeding>
 - Provides knowledge on the safety of medications for all breastfeeding parents

Breast Milk and Other Common Substances

- Caffeine
 - Passes into human milk
 - Infant may have jitteriness, fussiness, and difficulty sleeping
 - Limit caffeine to no more than 5 cups per day
- Alcohol
 - Passes into breast milk; peak 30-60 minutes after a drink

- Limit alcoholic beverages to one per day
- Heavy drinking (5+ drinks/day) may impact infant's neurodevelopment
- Marijuana
 - Known to pass into human milk
 - Long term studies are lacking
 - Advise mothers to avoid marijuana with lactation; however, it is not advised that marijuana users avoid lactation
- Tobacco
 - Smoking can decrease milk production
 - Avoid smoking while breastfeeding to limit second-hand smoke
 - Nicotine replacement products can be used; short-acting products, like gum, are preferred

Breast Milk and Common Infectious Diseases

- HIV
 - Mothers who achieve and maintain viral suppression through antiretroviral therapy during pregnancy, delivery, and post-partum may consider breastfeeding
 - Transmission through breastfeeding is less than 1% but it is not zero
 - Mothers should receive close follow-up
 - Healthcare providers should consult with infectious disease and the National Perinatal HIV/AIDS Hotline (888-448-8765) with questions
 - Hepatitis B and C
 - OK to breastfeed, but refrain with cracked/bleeding nipples
 - Herpes Simplex Virus
 - Refrain from breastfeeding on the side with lesions until they heal
- **Encourage demand BF or, when needed, semi-demand feeding as a transitional strategy for preterm and sick infants**

Introducing Oral Feeds

- Infant driven feeding protocol (**Appendix D**)
 - Assess mother's milk volume
 - Assess infant readiness

- Assess infant’s quality of feeding
- Procedure
 - If infant readiness score is a 1 or 2, attempt feeding
 - If infant quality of feeding score is a 1 or 2, continue feeding with length of feed based on mother’s milk supply
 - Supplement oral feeding based on mother's milk supply
 - Do not offer bottle until infant had three days of attempted breastfeeding
 - Infant should not attempt oral feeds with an infant readiness score or quality of feeding score of 3-5

References

Andrejko, C. (2020). Using Early Breast Milk Use Rates at Discharge from Neonatal Intensive Care Units. Capstone Project, Thomas Jefferson University.

Axia Women’s Health (2023). *How to Select a Flange Size*. <https://axiawh.com/resources/how-to-breast-pump/>

Daniels, S., Corkins, M., de Ferranti, S., Golden, N. H., Kim, J. H., Magge, S. N., ... & Stewart, D. L. (2017). Donor human milk for the high-risk infant: preparation, safety, and usage options in the United States. *Pediatrics*, 139(1).

Gonya J, Ray WC, Rumpf RW, et al. Investigating skin-to-skin care patterns with extremely preterm infants in the NICU and their effect on early cognitive and communication performance: a retrospective cohort study. *BMJ Open* 2017;7:e012985.

Howard C, Howard F, Lawrence R, et al. Office prenatal formula advertising and its effect on breastfeeding patterns. *Obstet Gynecol*. 2000; 95:296–303.

Hubbard, J. and Gattman, K. (2017). Parent–Infant Skin-to-Skin Contact Following Birth: History, Benefits, and Challenges. *Neonatal Network*, 36(2), pp.89-97

Breast Milk and Transition Home from the NICU

The majority of NICU graduates will feed from breast and bottle and most will require non-human
It is common to require fortification with non-human products (formula)

Up to 70% of NICU mothers cannot provide all of their baby's intake needs, despite adequate lactation support and effort and will require formula or donor milk as a **bridge** to full maternal milk

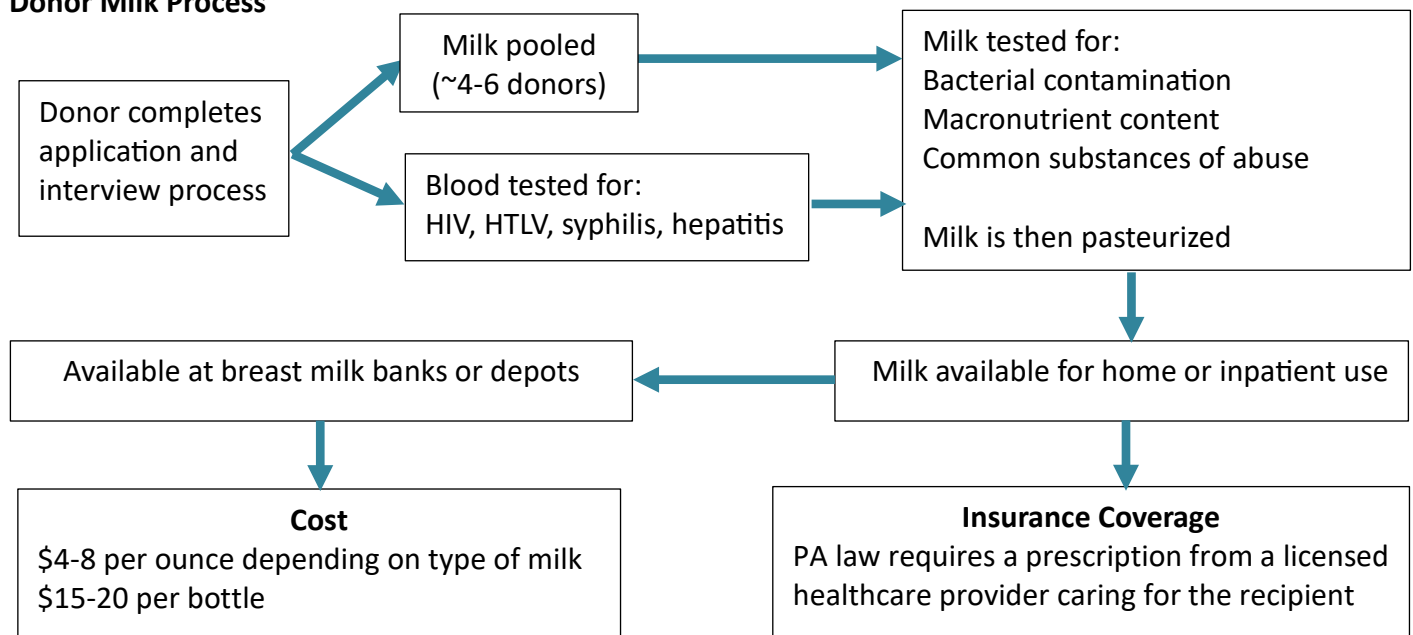
Duration

Mothers are recommended to breast feed for at least **6 months**

Breast feeding is encouraged with supplementary foods until 2 years

However, length of breast feeding depends on mother and baby's ability and wishes

Donor Milk Process



Common Indications for Donor Milk

Cardiac disorders	Immune disorders
Inborn errors of metabolism	Formula intolerance
Post-surgical nutrition	Renal disease
Short gut syndrome	Malabsorption disorders
Failure to thrive	Organ transplantation
Neonatal abstinence syndrome	

Prescription requires:

- Child's name
- Date of birth
- Current date
- Medical indication
- Amount of milk required per day

Donor Milk resources:

Mid-Atlantic Mother's Milk Bank : <https://midatlanticmilkbank.org>

Lactation Support after Discharge:

PA Dept. of Health:

<https://www.health.pa.gov/topics/programs/Breastfeeding/Pages/Breastfeeding.aspx>

Healthy Baby Line: 1-800-986-2229 (BABY)

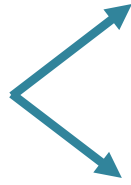
PA Breastfeeding Referral (lactation support by county):

Guide: <https://www.health.pa.gov/topics/Documents/Programs/Infant%20and%20Children%20Health/Breastfeeding%20Referral%20Guide.pdf>

A Healthcare Provider's Guide to Breast Milk in the NICU

Milk Expression

Breast milk expression should start within **1-2 hours of birth**



Expression should continue every 2-3 hours, including overnight

Milk expression should be 10-15 min per breast in the first 1-3 days

Target volumes

Day 1-2: 5-10 ml per day

Day 7: 60 ml per session

Day 14: 100 ml per session

Supplementation volumes

Day 1: 5-10 ml milk or formula

Day 2: 10-30 ml per feeding

Day 3: 15-30 ml per feeding

Oral Feeds

Breast or oral feeding in the NICU should start around 34 weeks adjusted or when baby shows oral cues (alert, rooting, hands to mouth, awakens for feeding times, good tone)

Duration of feeding depends should be infant-driven and depends on milk supply and infant's stress cues. Some examples of stress:

Finger splaying	Grimacing	Gagging	Turning head
Gaze aversion	Drowsy	Glassy eyes	Irritability
Color changes	Irregular respirations	Arching	
Raised or furrowed brows	Open mouth at rest		

Kangaroo care and milk expression

Kangaroo care (KC) or skin -to-skin care (STS) increases breast milk production and breast feeding rates after NICU discharge

Infant transfer should include 2 trained people or 3 for intubated infants

KC should be offered for all NICU babies excluding those with:

- umbilical arterial lines
- less than 48h post-operative
- acute or sudden deterioration within 24h
- infants with chest or abdominal lesions
- maternal contact-contagious conditions

Benefits

Breast milk is associated with lower rates and lowered hospital costs due to:

- * Necrotizing enterocolitis (NEC)
- * Late infections
- * Retinopathy of prematurity
- * Bronchopulmonary dysplasia
- * Mortality

Common Supplies

Pump (hand or electric)

Labels and pumping log

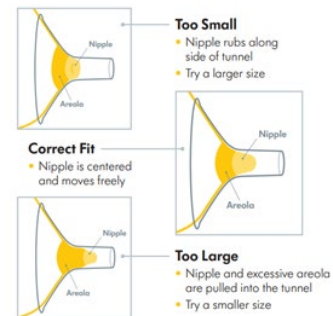
Wash basin

Bottles and syringes

Bottle brush and soap

Car adapter

Choosing correct pump flange size



Contraindications

Metabolic: Classic galactosemia

Infections: HTLV-1 or 2, untreated brucellosis, active tuberculosis, suspected Ebola virus

HIV cases should be assessed for social determinants of health and potential health inequities - the rate of HIV transmission through breast milk is <1% in virally suppressed women

Active herpetic lesions of breast or Hepatitis C with cracked or bleeding nipple - may feed or pump from unaffected breast

Drugs: illicit opioids, cocaine, phencyclidine (PCP)

The AAP discourages use of marijuana, alcohol, and tobacco in lactating women

Title: Breast Milk Use and Handling in the NICU

Origination Date:

Review Date:

Revision Date:

I. Purpose:

- To ensure safe collection, storage, handling, and administration of breast milk so that sick and premature infants can obtain the nutritional benefits of their own mother's breast milk.
- Breast milk must be properly handled and identified for storage, administration, infant transport, transfer, and discharge.

II. Definitions:

Maternal Breast Milk: Milk expressed by mother

Donor Breast Milk: Pasteurized human milk provided by a certified milk bank, e.g., Human Milk Banking Association of North America (HMBANA)

III. Policy:

A. Feedings:

1. Feeding orders are initiated by the clinicians.
2. Maternal breastmilk should be offered first and preferred.
3. If maternal breast milk unavailable pasteurized donor milk should be used in all infants with parental acknowledgment
4. Provide parents with the [Donor Milk Patient Education Sheet](#) before giving donor milk
5. Mother sign [Acknowledgement for Donor Milk Use](#). (Sheets are also available in Spanish.)

6. Breast milk is preferred for infant feeding and should be encouraged if no contraindications exist.

- a. Contraindications include but may not be limited to a mother who is
 - HIV and/or HTLV positive
 - Taking antiretroviral drugs
 - Positive for tuberculosis and is untreated
 - Using or is dependent on illicit drugs
 - Undergoing chemotherapy
 - Undergoing radiation therapy (requires temporary interruption of breastfeeding)
- b. Contraindications also include infants with:
 - Classic galactosemia
 - Maple syrup urine disease
 - Phenylketonuria

7. In the event that breast milk is unavailable, and parents refuse donor milk, a partially hydrolyzed exclusively whey-based formula will be the preferred feeding.

8. Transitioning off donor milk should begin at 34 weeks and 2000 grams or when the neonate is taking 75% of feeding volume orally or at the discretion of the physician.

B. Collection of Maternal Breastmilk

1. The nurse caring for the baby in the NICU or the lactation consultant should instruct mother on how to collect, store and label maternal breastmilk

2. Mothers pumping milk for their babies should be provided with an ID band with her baby's pre-printed bar-coded label attached, a supply of bar-coded labels pre-printed with the baby's name, birthdate and medical record number, and a

supply of polypropylene milk collection bottles with lids.

C. Receiving breast milk in the NICU

1. When receiving breast milk in the NICU, the NICU staff member should:
 - a. Verify the labels on the breast milk containers match the label on the identification bracelet presented by the person delivering the milk
 - b. Verify that the label contains mother's initials and date and time maternal breastmilk was pumped.
2. The NICU staff member receiving the milk should initial each container, verifying that name, birth date and medical record number match.
3. If the mother is a patient in the hospital, and a hospital employee delivers the milk to the NICU, the mother should initial the label, prior to delivery to the NICU, confirming it is the correct label. The staff member accepting the milk should initial the label, verifying correct name, birth date and medical record number on the infant's name band or chart.
4. Milk that is not properly labeled cannot be accepted for storage in the NICU, if mislabeled product must be discarded.

D. Order of feedings

1. Fresh or frozen colostrum should be fed before any other maternal breastmilk or formula is given.
2. Feed colostrum and/or maternal breastmilk in the order in which it was pumped.
3. After all colostrum is used, feed the infant fresh breastmilk if available. If fresh is not available, use frozen breastmilk, using oldest milk first.

E. Fortification of Breastmilk

For preterm infants, fortification may be necessary to increase calories, protein, vitamin and mineral content to meet the needs of the premature or sick infant.

1. Type and amount of fortifier should be ordered by neonatal provider.

- a. Confirm fortification order in patient's chart
 - b. Fortify milk in the milk preparation area in the NICU
 - c. Clean work surface before and after milk preparation with hospital approved sanitizer
2. When fortifying breast milk, the following steps should be followed:
- a. Place infant's bar-coded label on empty bottle
 - b. Initial label, confirming label on empty bottle matches label on plain breastmilk container (i.e. name, birthdate and medical record number on both labels match)
 - c. Fortify milk per provider order in correctly labeled bottle
 - d. Shake GENTLY to mix fortifier with milk, avoiding vigorous shaking of milk
 - e. Store fortified human milk in milk refrigerator and use within 24 hours of fortification.
 - All human milk in milk refrigerator must be labeled with specific information regarding contents, (i.e. plain breast milk, fortified breast milk with calories/oz, including date/time of fortification or thawed, expiration date/ time with initials of staff that prepared milk)
 - f. Warm milk in infant nutritional warmer before feeding.
 - g. Take milk to bedside and follow steps in section F below.

F. Administration of Feedings-

Preparation and administration of breast milk should be approached in the same manner as medication preparation and administration, following the 5 Rights of Administration.

Breast milk must be properly handled and identified for administration.

1. Feeding preparation should take place at the designated feeding preparation area in the NICU.
2. Prepare one baby's feeding at a time.
3. Ensure adequate lighting when preparing and administering feedings.

4. Ensure the work area is clean
5. Staff members handling feedings should wash hands and wear gloves.
6. Milk that has been expressed at different times and which has been stored in separate containers may be combined and pooled for administration in the NICU.
7. Staff member preparing the feeding should
 - a. Obtain bar-coded label that matches the baby whose feeding is being prepared.
 - b. Initial the label confirming that the label obtained matches the label on the bottle the feeding will be taken from and the label on the graduate container. Attach label to syringe or infant feeding bottle.
 - c. Label syringe/feeding bottle with contents (i.e. plan/fortified BM, date/time of either fortified/thawed date/time of expiration, with staff initial that prepared BM).
 - d. When transferring milk from storage bottle to a feeding syringe or bottle, place label on feeding container, initial label confirming label matches the label on the container of fortified milk
 - d. Pour or withdraw amount needed for feeding.
 - e. Place feeding in labeled infant feeding warmer bag and place in a well in the infant feeding warmer
8. When warming is complete, take the labeled container of maternal breastmilk to the baby's bedside if warmer not available at bedside. If the infant is in isolation, keep warming bag at feeding prep area.
9. Prior to administering feeding, the barcoded scanning label on the infant will be scanned. Next, the barcoded scanning label on the syringe or infant feeding battle will be scanned into the electronic medical record. A second staff member will cosign the administration in the electronic medical record, confirming the correct breastmilk is being administered to the infant.
10. If mother has limited breast milk supply, do not mix breast milk and formula

11. Administration of maternal breastmilk via feeding pump
 - a. If a continuous tube feeding, hang only 3-hour amount of milk at one time.
 - b. Change the syringe and tubing with each feeding.
 - c. Orient the syringe at a 25° to 40° angle, with the syringe tip pointing up, to enhance fat delivery.
 - d. Do not overfill syringe more than necessary to ensure baby receives nearly all the milk in the syringe and tubing, including the fat.

G. Thawing/Warming maternal breastmilk.

1. Thaw all frozen breastmilk in the refrigerator or in an infant nutrition warmer.
2. Indicate date and time milk was thawed on the bottle.
3. Thawed breastmilk expires 24 hours after thawing.
4. Warm refrigerated breast milk in one of the infant nutrition warmers.

H. Storing maternal breastmilk in the NICU

1. Infant's milk should be labeled with the baby's bar-coded label and stored in individualized bins labeled with baby's bar-coded label.
2. Breast milk is not to be stored on the door of the refrigerator or freezer
3. Freshly pumped milk that will not be used completely within 72 hours after expression should be frozen. All milk that has been frozen then thawed will be labeled with the date and time thawed and will have a storage life of 24 hours after thawing.
 - a. Do not refreeze milk that has completely thawed.
 - b. Milk less than half-frozen may be refrozen.
4. Breast milk is to be stored in amounts appropriate for the infant's current needs.
5. Temperatures should register:
 - Refrigerator temperature- no lower than 1°C and no higher than 4°C

- Freezer temperature- no lower than -28°C and no higher than -18°C

I. Transfer/Discharge of Infant

1. Breast milk storage container labels must be checked by the NICU staff on any infant transport to or from SLUHN, transfer to another unit at SLUHN, or upon discharge home.
2. Infants coming from other facilities may have different maternal breastmilk storage containers. These containers of breast milk will be accepted on admission providing they are properly labeled with the infant's label from the sending facility. Ask mother to initial labeled container of maternal breastmilk.
3. Provide mother with pre-printed bar-coded labels and containers for breastmilk collection. Instruct mother on SLUHN breast milk labeling process.

J. Medications and Breastmilk

1. The physician/NNP/PA should be notified if the mother has any illness or is taking medications other than prenatal vitamins.
2. Information on maternal medications compatible with breast feeding can be found at:
 - a. <https://www.toxnet.nlm.nih.gov/newtoxnet/lactmed.htm>
 - b. <https://www.infantrisk.com>
 - c. Hale and Rowe's Medications and Mothers Milk

V. References:

- American Academy of Pediatrics Section on Breastfeeding (2012). Breastfeeding and the use of human milk. *Pediatrics*, 129 e827-841. doi: 101542/peds.2011-3552.
- Arnold, L., (2010). Policies to improve human milk use in the NICU; A ten-step framework in. *Human milk in the NICU: Policy into Practice*. Boston: Jones and Bartlett.
- Centers for Disease Control and Prevention. (2022, January 24). *Proper storage and preparation of breast milk*. Centers for Disease Control and Prevention. Retrieved April 4, 2022, from https://www.cdc.gov/breastfeeding/recommendations/handling_breastmilk.htm
- Jones, F. (2011). Best practice for expressing, storing, and handling human milk: In hospitals, homes and childcare settings. (3rd ed.). Fort Worth Texas.
- Leibert, M. (2010). Academy of breastfeeding medicine protocol #7: Model Breastfeeding Policy (revision 2010). *Breastfeeding Medicine*, 5. doi.10,1089/bfm.2010.9986.
- Mannel, R., Martens, P., Walker, M., (Eds.). (2013). *Core curriculum for lactation consultant practice* (2nd ed.). Boston: Jones and Bartlett.
- Pediatric Nutrition Practice Group. (2011). *Infant feedings: Guidelines for preparation of human milk and formula in health care facilities*. S.T. Robbins & R. Meyers (Ed.). Chicago, IL: American Dietetic Association
- Steven A. Abrams, Susan Landers, Lawrence M. Noble, Brenda B. Poindexter, Committee On Nutrition, Section On Breastfeeding, Committee On Fetus And Newborn; Donor Human Milk for the High-Risk Infant: Preparation, Safety, and Usage Options in the United States. *Pediatrics* January 2017; 139 (1): e20163440. 10.1542/peds.2016-3440

VI. Policy Responsibility:

Hospital Name	NICU Policy Committee	Development/Review/Revision
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VII. Disclaimer Statement:

This policy and procedure is intended to provide a description of a course of action to comply with legal requirements and/or operational standards. There may be specific circumstances not contemplated by this policy and procedure that may make compliance either unclear or inappropriate. For advice in these circumstances, consult with your Chain of Command, Administrator on Call, Clinical Risk Management, Legal Services, Accreditation and Standards, or Compliance Officer, as appropriate.

VIII. Approval:

NICU Policy Committee

Skin-to-Skin Care (SSC)

Background

Skin-to-skin care (SSC) or Kangaroo Care (KC) is the practice of skin-to-skin contact between an infant and parent. It was introduced more than 25 years ago in Bogota, Colombia.

There is a strong indication that SSC before 30 weeks postmenstrual age may play a role in the cognitive and communication development of extremely preterm infants. The period of time before 32 weeks is often considered a developmentally marginal time period in communication and language development.

Benefits for infant

- Prevents hypothermia by warm transfer from mother to child
- Improves and/or maintains stability even in very preterm infants. In particular, heart and respiratory rate show lower variation such as oxygen saturation, and episodes of apnea and bradycardia are reduced
- Reduces stress, decreasing cortisol release during KC session
- Positively effects on infants' sleep patterns as a result of improved brain maturation
- Improves neurobehavioral and psychomotor development
- Decreases pain response in preterm infants during painful procedures
- Stabilizes weight loss

Benefits for parents

- Improves parent–infant interaction
- Increases psychological well-being and improves psychological adaptation and recovery after preterm delivery
- Promotes recovery from postpartum depression
- Salivary cortisol decreases in mothers of infants born at 25-33 weeks
- Improve maternal confidence in caring for preterm infant

Benefits for breastfeeding

- Facilitates access to breast and increases production of human milk
- Increases breastfeeding rate, proportion of exclusive breastfeeding at NICU discharge, and longer breastfeeding duration

Eligibility Criteria

- After 72 hours of age due to mid-line positioning (for micropremies)
- Any type of respiratory support
- Stable vital signs
- Infants in humidity may do SSC for 1 hour once per day

Contraindications

- Chest tubes in place
- UACs
- Excessive weight loss greater than 15%
- Early post-operative period
- Medically unstable
- Vasopressor medications
- If palliative care is in place above restrictions do not apply

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- Determine parental readiness for SSC and obtain their agreement to provide SSC to their infant for at least 1 hour at a time
- Secure all tubes and lines
- Perform any needed procedures that may later interrupt infant holding, if possible
- Set up rocker/recliner and privacy screen beside incubator
- Check heart rate, respiratory rate, oxygen saturation, and temperature before and 15

minutes after transfer.

Transfer into SSC

- At least two nurses should be present for the transfer of an infant receiving respiratory support such as CPAP or invasive ventilation. The transfer procedure is the greatest contributor to infant heat loss and stress.
- The heated receiving blanket folded in fourths be places under the infant prior to transfer
- Type of transfer depends on parent's comfort and ability to get in and out of the chair by himself or herself
- Two types of transfer can be used with SSC when an infant is on a ventilator: standing or sitting.
 - Standing transfer:
 - Respiratory therapy ensures that ventilatory tubing is free and mobile and long enough to reach from ventilator to recliner
 - Bedside nurse or neonatologist secures the ET tube with their hand until the baby is properly placed
 - Mother places her hands under the receiving blanket on which the infant is lying
 - Mother lifts the infant directly to her bare chest in one movement
 - Mother then sits down in the recliner and nurses attached the tubing to her
 - Sitting Transfer
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 - Bedside nurse or neonatologist secures the ET tube with their hand until the baby is properly placed
 - Mother sits in the chair and has her infant handed to her by the nurse
 - Ventilator tubing is positioned appropriately for the KC session

Position of neonate

- Position the infant comfortably upright and prone with their legs and arms flexed and their head to one side

- Have the parent support the infant with one hand on the infants' head and the other over the infant's bottom
- The infant, clad in a diaper and cap, is held against the bare chest of the parent and covered with clothing and/or a blanket
- Allow the infant time to settle into SSC
- Adjust oxygen as required, allowing for a 10% increase
- Duration of skin-to-skin contact varies but usually lasts 1 h to 3 h per session, with cardiorespiratory and temperature monitoring of the infant during this time
- Encourage maternal expression after she has performed SSC, as a larger volume of milk may be obtained
- Provide a hand-held mirror for the parents so that they can see the baby's face during SSC time
- Strongly discourage cell phone use and/or any other distractions during SSC

Return of infant to incubator

- Remind parents to not do this alone
- Ensure nurse and respiratory therapist are present
- Perform standing or sitting transfer in reverse clothing

References

- Gonya J, Ray WC, Rumpf RW, et al. Investigating skin-to-skin care patterns with extremely preterm infants in the NICU and their effect on early cognitive and communication performance: a retrospective cohort study. *BMJ Open* 2017;7:e012985. doi: 10.1136/bmjopen-2016-012985
- Hubbard, J. and Gattman, K. (2017). Parent–Infant Skin-to-Skin Contact Following Birth: History, Benefits, and Challenges. *Neonatal Network*, 36(2), pp.89-97
- Karlsson, V, Heinemann, A, Sjors, G, Hedberg Nykvist, K & Agren, J (2012), ‘Early Skin-to-Skin Care in Extremely Preterm Infants: Thermal Balance and Care Environment’, *Journal of Pediatrics*, 161(3): 422-426.
- Ludington, S. M., Ferreira, C. N., & Swinth, J. Y. (1999). Skin to-skin contact effects on pulmonary function tests in ventilated preterm infants. *Journal of Investigative Medicine*, 47(2), 173A
- Susan M. Ludington-Hoe, Carla Ferreira, Joan Swinth, Jennifer J. Ceccardi. *Safe Criteria and Procedure for Kangaroo Care with Intubated Preterm Infants*.
- Vanderbilt University Medical Center. NICU Kangaroo Care. Nashville, TN: Vanderbilt University Medical Center; 2007. AS 209137-10.40. <http://vumcpolicies.mc.vanderbilt.edu/E-Manual/Hpolicy.nsf/AllDocs/61081E8DA303B>

Breastmilk Fortification Recipes

Fortification in the NICU using hydrolyzed human milk fortifier (HHMF):

22 kcal/oz = 50 ml breast milk + 1 packet (5ml) HHMF

24 cal/oz = 25 ml breast milk + 1 packet (5ml) HHMF

**Fortification with formula powder varies depending on available volume of breast milk and brand specifications*

Fortification at NICU Discharge using 22 kcal/oz preterm formula:

22 kcal/oz: 3 oz breast milk + 0.5 tsp preterm formula powder

24 kcal/oz: 3 oz breast milk + 1 tsp preterm formula powder

**Instruct families that the recipes are made in bulk and individual volumes per feeding should be documented clearly*

ORAL CARE

- *I'm not quite ready to begin the road to feeding*
- *Mom: Please pump 8-10 times a day including at least one time overnight.*
- *Every drop counts! I need your colostrum for oral care. It's like medicine!*



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Kangaroo/Skin to Skin Care

I am ready to be held skin to skin.

*Please hold me skin to skin at least one time every day.
Holding me skin to skin will increase your milk supply
and get me ready to breastfeed.*

*Mom: Please keep pumping 8-10 times a day. It is so
good for me, and I will need much more as I get bigger.*

*Nurse: Please help my mom feel comfortable and safe
during skin to skin. Tell her she is doing great!*



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Non-nutritive Breastfeeding

- *I'm ready for non-nutritive breastfeeding when:*

- *I do well when you hold me skin to skin*
- *My breathing is strong on my own*

Mom: Please pump your breasts before a non-nutritive breastfeeding session.

If I get too sleepy, you can just hold me skin-to-skin. Non-nutritive sucking is great to do during tube feedings!

Mom remember to keep pumping 8-10 times per day!



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Nutritive Breastfeeding

- I'm ready for nutritive breastfeeding when:
 - I am active, alert, and suck well during non-nutritive breastfeeding
 - I'm not having trouble with my breathing
- Mom: Watch me for hunger and fullness cues. Pump after each feeding to increase your milk supply. There are ways to see how well I'm doing including listening for swallowing, noting my latch, and checking my weight before and after feedings.
- Nurse: Help me and my mom while we learn to breastfeed. If I don't eat well at the breast, please give me a tube feeding. If I don't have a tube, I may need a bottle.
- Mom remember to keep pumping 8-10 times per day!



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- I'm ready for nutritive breastfeeding when:
 - I am active, alert, and suck well during non-nutritive breastfeeding
 - I'm not having trouble with my breathing
- Mom: Watch me for hunger and fullness cues. Pump after each feeding to increase your milk supply. There are ways to see how well I'm doing including listening for swallowing, noting my latch, and checking my weight before and after feedings.
- Nurse: Help me and my mom while we learn to breastfeed. If I don't eat well at the breast, please give me a tube feeding. If I don't have a tube, I may need a bottle.
- Mom remember to keep pumping 8-10 times per day!



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 - I am active, alert, and suck well during non-nutritive breastfeeding
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- Mom remember to keep pumping 8-10 times per day!



Bottle Feeding

- *I'm ready to learn how to bottle feed when:*
 - ✓ *I am active, alert, and suck well on my pacifier.*
 - ✓ *I am not having trouble with my breathing.*
 - ✓ *It is developmentally appropriate.*
- *Feed me when I show signs that I am hungry, but don't wait more than 3 hours between feedings.*
- *Mom: The nurses will teach you how to feed me a bottle.*
- *Nurse: If I am too sleepy or I'm showing signs of stress, please give me a tube feeding.*



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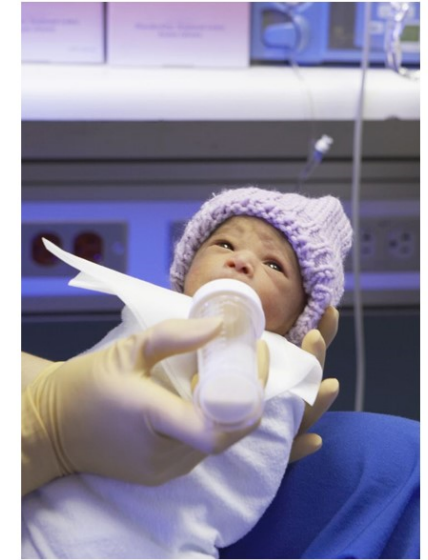
Breast and Bottle Feeding

- I am ready to learn how to bottle feed when:
 - ✓ I am doing well with non-nutritive breastfeeding.
 - ✓ It is developmentally appropriate.
- Continue to let me practice breast feeding as much as possible.
- Feed me when I show signs that I am hungry, but don't wait more than 3 hours between feedings.
- Mom: I need to learn how to feed from a bottle for times you can't be with me. The nurses will teach you how to feed me a bottle. Keep pumping after breastfeeding!
- Nurse: If I am too sleepy or I'm showing signs of stress, please give me a tube feeding.



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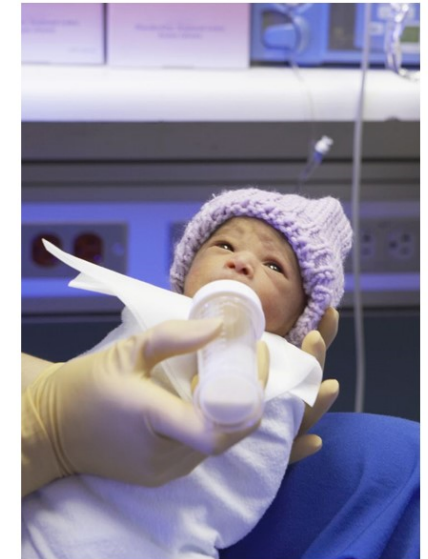
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Discharge Planning

- I am going home soon!
- **Mom:** Keep pumping after breastfeeding until I am taking all feedings from the breast.
- **Nurse:** Help my parents understand and practice my special feeding plan for home. Watch me and my mom breastfeed before I go home.
- **Parents:** We'll do great at home!



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The Keystone 10 Initiative: Ten Steps to Breastfeeding Success

1. Have a written breastfeeding policy that is routinely communicated.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant mothers about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within one hour of birth.
5. Show mothers how to breastfeed and how to maintain lactation, even if they are separated from their infants.
6. Give infants no food or drink other than breast milk unless medically indicated.
7. Practice “rooming-in.” Allow mothers and infants to remain together 24 hours a day.
8. Encourage unrestricted breastfeeding.
9. Do not give pacifiers or artificial nipples to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them upon discharge from the facility or clinic.



Breastfeeding Resources for Providers

Top Three Resources

First Droplets:

<https://firstdroplets.com/abcs/>

Support providers and parents with effective breastfeeding techniques to prevent common challenges.

The Institute for the Advancement of Breastfeeding and Lactation Education (IABLE):

<https://lacted.org/>

Specifically for providers to the outpatient sector.

Global Health Media- Breastfeeding Series:

<https://globalhealthmedia.org/topic/breastfeeding/>

Short and practical videos enabling learners to remember critical teaching points.

Tools for Health Professionals

American Academy of Pediatrics- Physician Education Training on Breastfeeding Action Plan:

<https://downloads.aap.org/AAP/PDF/AAP-Physician-Education-and-Training-Breastfeeding-Action-Plan.pdf>

Recommends strategies to fill breastfeeding-related education and training gaps for providers.

Creating a Culture to Support Breastfeeding Physicians and Medical Trainees:

https://downloads.aap.org/AAP/PDF/CulturePlan_Infographic_Front_and_Back.pdf

Discusses the four phases for implementing a breastfeeding policy and creating a culture in your workplace.

Breastfeeding Practice Tools for Health Professionals:

<https://www.aap.org/en/patient-care/breastfeeding/breastfeeding-practice-tools-for-health-professionals/>

Provides evidence-based practice tools and resources including ready-made presentations to educate.

The CDC Guide to Breastfeeding Strategies:

<https://www.cdc.gov/breastfeeding/pdf/bf-guide-508.pdf>

Providing guidance on strategies to support breastfeeding parents and increase breastfeeding rates.

Lactation Training Education (LTE):

<https://www.lactationtraining.com/resources/handouts-professionals>

LTE has a comprehensive, up-to-date catalog of lactation courses by experienced instructors.

PA Breastfeeding Referral Guide:

<https://www.health.pa.gov/topics/Documents/Programs/Infant%20and%20Children%20Health/Breastfeeding%20Referral%20Guide.pdf>

The Guide provides information on lactation support by county.

Medication and Breastfeeding

Mother to Baby:

<https://mothertobaby.org>

Accessible evidence-based information on whether prescribed treatments affect their developing baby.

Trash the Pump and Dump (TPD):

<https://trashthepumpanddump.org>

Encompasses medical conditions, medications and substances of concern during lactation.

LactMed Database:

<https://www.ncbi.nlm.nih.gov/books/NBK501922/>

Information on drugs and other chemicals, adverse effects, and exposure to breastfeeding people.

Infant Risk Center:

<https://www.infantrisk.com/category/breastfeeding>

Provides knowledge on the safety of medications for all breastfeeding parents.

Appendix C

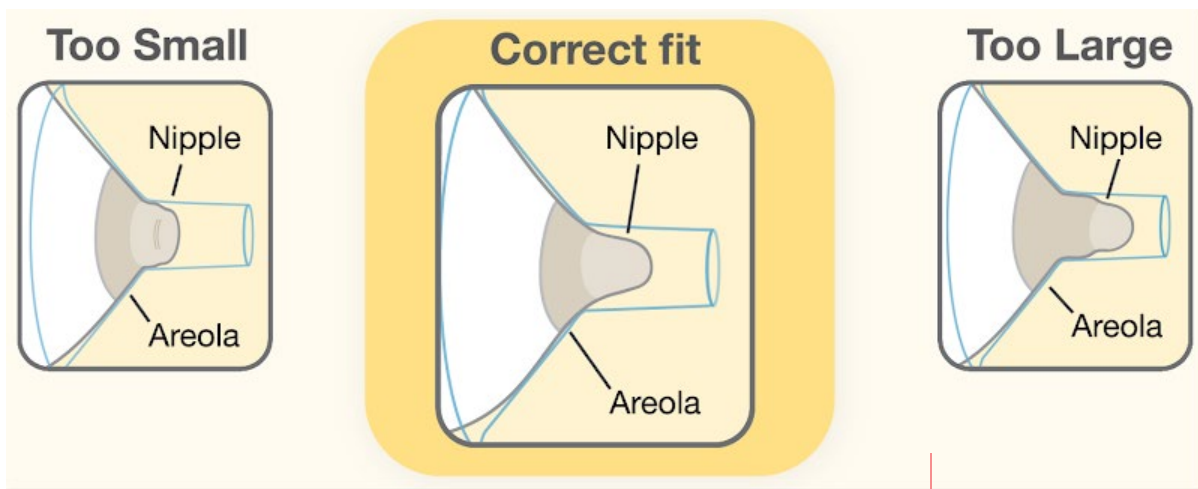
Two Hour Express



- Mom should ideally **express** her breast milk within **2 hours** of giving birth
- Early breast milk expression means **more breast milk** for your baby

Andrejko, C. (2020). Using Early Breast Milk Use Rates at Discharge from Neonatal Intensive Care Units. Capstone Project, Thomas Jefferson University.

Appendix D



Axia Womens Health (2023). *How to Select a Flange Size*. <https://axiawh.com/resources/how-to-breast-pump>

- Lu, M. C., Lange, L., Slusser, W., Hamilton, J., & Halfon, N. (2001). Provider encouragement of breastfeeding: evidence from a national survey. *Obstetrics & Gynecology*, 97(2), 290-295.
- Maffei, D., Brewer, M., Codipilly, C., Weinberger, B., & Schanler, R. J. (2020). Early oral colostrum administration in preterm infants. *Journal of Perinatology*, 40(2), 284-287.
- Meek, J. Y., Noble, L., & Section on Breastfeeding. (2022). Policy statement: breastfeeding and the use of human milk. *Pediatrics*, 150(1), e2022057988
- Nyqvist, K. H., Häggkvist, A. P., Hansen, M. N., Kylberg, E., Frandsen, A. L., Maastrup, R., Ezeonodo, A., Hannula, L., & Haiek, L. N. (2012). Expansion of the ten steps to successful breastfeeding into neonatal intensive care: expert group recommendations for three guiding principles. *Journal of Human Lactation*, 28(3), 289-296.
- Parker, M. G., Stellwagen, L. M., Noble, L., Kim, J. H., Poindexter, B. B., & Puopolo, K. M. (2021). Promoting human milk and breastfeeding for the very low birth weight infant. *Pediatrics*, 148(5).
- Trash the Pump and Dump (2023). <https://trashthepumpanddump.org>

Appendix E

Skin-to-Skin Care (SSC)**Eligibility Criteria**

- After 72 hours of age due to mid-line positioning (for micropremies)
- Any type of respiratory support
- Stable vital signs
- Infants in humidity may do SSC for 1 hour once per day

Contraindications

- Chest tubes in place
- UACs
- Excessive weight loss greater than 15%
- Early post-operative period
- Medically unstable
- Vasopressor medications
- If palliative care is in place above restrictions do not apply

Before SSC

- Educate parent(s) about the benefits of SSC and need to provide at least 1 hour per session
- Determine parental readiness for SSC and obtain their agreement to provide SSC to their infant for at least 1 hour at a time
- Secure all tubes and lines
- Perform any needed procedures that may later interrupt infant holding, if possible
- Set up rocker/recliner and privacy screen beside incubator
- Check heart rate, respiratory rate, oxygen saturation, and temperature before and 15 minutes after transfer.

Transfer into SSC

- At least two nurses should be present for the transfer of an infant receiving respiratory support such as

CPAP or invasive ventilation. The transfer procedure is the greatest contributor to infant heat loss and stress.

- The heated receiving blanket folded in fourths be places under the infant prior to transfer
- Type of transfer depends on parent's comfort and ability to get in and out of the chair by himself or herself
- Two types of transfer can be used with SSC when an infant is on a ventilator: standing or sitting.
 - Standing transfer:
 - Respiratory therapy ensures that ventilatory tubing is free and mobile and long enough to reach from ventilator to recliner
 - Bedside nurse or neonatologist secures the ET tube with their hand until the baby is properly placed
 - Mother places her hands under the receiving blanket on which the infant is lying
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 - Mother sits in the chair and has her infant handed to her by the nurse
 - Ventilator tubing is positioned appropriately for the KC session

Position of neonate

- Position the infant comfortably upright and prone with their legs and arms flexed and their head to one side
- Have the parent support the infant with one hand on the infants' head and the other over the infant's bottom
- The infant, clad in a diaper and cap, is held against the bare chest of the parent and covered with clothing and/or a blanket
- Allow the infant time to settle into SSC
- Adjust oxygen as required, allowing for a 10% increase

- Duration of skin-to-skin contact varies but usually lasts 1 h to 3 h per session, with cardiorespiratory and temperature monitoring of the infant during this time
- Encourage maternal expression after she has performed SSC, as a larger volume of milk may be obtained
- Provide a hand-held mirror for the parents so that they can see the baby's face during SSC time
- Strongly discourage cell phone use and/or any other distractions during SSC

Return of infant to incubator

- Remind parents to not do this alone
- Ensure nurse and respiratory therapist are present
- Perform standing or sitting transfer in reverse clothing

Dr Brown's Infant Driven Feeding Pro™

Infant Readiness Score

Score	Description
1	Alert or fussy prior to care. Rooting or hands to mouth behavior. Good tone.
2	Alert once handled. Some rooting or takes pacifier. Adequate tone
3	Briefly alert with care. No hunger behaviors. No change in tone
4	Sleeping throughout care. No hunger cues. No change in tone
5	Significant change in HR, RR, O ₂ , or work of breathing outside of safe parameters

Infant Quality of Feeding Score

Score	Quality Description
1	Nipples with a strong coordinated SSB throughout feeding
2	Nipples with a strong coordinated SSB but fatigues with progression
3	Difficulty coordinating SSB despite consistent suck
4	Nipples with weak/inconsistent SSB; Little to no rhythm
5	Unable to coordinate SSB pattern; significant change in HR, RR, O ₂ , work of breathing outside safe parameters or unsafe SSB during feeding

