**Supplemental Table 3: Spatz 10 Steps to Breastfeeding**

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| **Steps79** | **Considerations for CHD** |
| Step 1: Informed Decision Making for the Use of Human Milk | Use of human milk can protect infants with CHD from infection, decrease the risk for necrotizing enterocolitis, improve feeding tolerance and is the ideal choice for nutrition for infants with CHD.234-236 All parents should receive antenatal education regarding the science of human milk and physiology of lactation in order to ensure they make an informed feeding decision to provide human milk for their infant.79,80 Research demonstrates that when parents receive appropriate evidence based prenatal counseling 100% will choose to provide milk for their infants and 87% will do so through discharge from intensive care units (neonatal and cardiac ICUs).84 |
| Step 2: Initiation and Maintenance of Milk Supply | Once parents have made informed feeding decisions the next step is to ensure that the parent can effectively initiate and maintain milk supply.79,80 Parents should have access to hospital grade computer chip pump technology.79,80 It is essential for staff to prioritize early frequent pumping to ensure coming to volume. Early frequent pumping is associated with improved human milk and breastfeeding outcomes. Even parents who have cesarean births should be pumping immediately after birth.237,238 |
| Step 3: Human Milk Management | The use of fresh milk should always be prioritized as fresh milk is more potent than frozen thawed milk. 79,80 Store human milk for up to 96 hours in the refrigerator. If there is not enough of parents own milk available Pasteurized Donor Human Milk (PDHM) should be utilized as a bridge. PDHM is a cost-effective strategy in the presence of a strong human milk culture. 239 |
| Step 4: Oral Care and Feeding of Human Milk | Start human milk oral care as soon as drops of colostrum are available. Oral care should be done every time a parent pumps (every 2-3 hours) or when a nurse is providing bundled infant care. Use only fresh milk (not frozen/thawed) for human milk oral care. Human milk oral care should continue until infant is able to eat by mouth.79,240 Once enteral feedings are started, human milk should be fed in the order that it was pumped (use colostrum first) for the first 48 to 96 hours after initiation of feeding. This is the one-time frozen milk would be recommended if the colostrum had to be frozen because the infant did not start feeding in first 96 hours. |
| Step 5: Skin-to-Skin Care | Skin-to-skin care/contact has been found to support maternal attachment and decrease stress in mothers of infants with CHD.146 Increasing parental involvement and participation in daily cares and oral feeding can help support their role as a primary caregiver and decrease parental stress.241 Initiate skin-to-skin care once infant is physiologically stable. Have parent pump prior to skin to skin (pump an extra 2 minutes after last milk ejection to ensure breast is empty as possible). |
| Step 6: Non-nutritive Sucking | If infant is extubated the infant could also do non-nutritive suckling at the breast while in skin-to-skin care. If infant is intubated, start non-nutritive suckling at the breast once infant is extubated following same procedure at above for pumping. Have infant be gavage/tube fed during non-nutritive suckling. |
| Step 7: Transition to Direct Breastfeeding | Assess infant daily for feeding readiness cues. There is considerable evidence in the literature indicating improved physiologic stability and oxygenation with breastfeeding compared to bottle feeding.242 |
| Step 8: Evaluation of Milk Transfer | When working with critically ill infants, clinical cues or traditional tools such as the LATCH score are not adequate to determine if an infant is feeding effectively. For infants with CHD, pre-and post-weights should be utilized to determine milk transfer and feeding effectiveness.80,236 |
| Step 9: Preparation for Discharge | A critical element to ensure breastfeeding at discharge is to maintain milk supply. It is essential that health care providers caring for infants with CHD understand to critical role of human milk and prioritize helping families being able to effectively initiate and sustain milk supply.80,236 When there is a robust milk supply, families may be able to fractionate milk to allow their infant to receive higher calorie milk that is expressed towards the end of the pumping session. Research in other vulnerable populations demonstrate that infants can go home on a combination of tube feeding and direct feeding at the breast. If fortification is required, there should be careful consideration of the family’s personal breastfeeding goals so that growth can be optimized and direct breastfeeding can also occur.80,236,243 |
| Step 10: Appropriate Follow-up | Infants with CHD will need appropriate follow-up to support human milk and breastfeeding. The lactating parent may need to continue to use a hospital grade pump post-discharge. In addition, sending the parent home with a Baby Weigh™ scale will allow the parent to measure milk transfer and can support direct feeding at the breast while ensuring that the infant is growing adequately.79,80 |

Spatz DL. Ten steps for promoting and protecting breastfeeding for vulnerable infants. J Perinat Neonatal Nurs. Oct-Dec 2004;18(4):385-96. doi:10.1097/00005237-200410000-00009