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# Challenges of breastfeeding preterm infants: A case study. What goes right, what goes wrong, and what can nurses do?

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Title Page

Challenges of Breastfeeding Preterm Infants

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## Case Study on Breastfeeding Challenges for the Preterm Infant

### Abstract

This case report highlights the challenges for mother-preterm infant dyads who choose to breastfeed. For breastfeeding to succeed, and for the preterm infant to reap all the benefits breastfeeding provides, health care providers on all levels must increase communication between practices and institutions, enhance continuity of care, and diagnose and manage problems quickly and correctly. This article demonstrates many areas where anticipatory guidance for the mother and infant could have resulted in a better outcome.

Key words: Breast Feeding; Infant, Premature; Neonatal Intensive Care Unit; Health Professional Support; Continuity of Care

### Callouts

1. “I wished that they (RNs) would have asked me what *my* goal was. I had to be the one to even bring up nursing (breastfeeding)—it wasn’t something they would ask.”§
2. Communication between practitioners and with the dyad can make all the difference for breastfeeding success. ¥
3. As nurses continue to learn about the critical transitions for preterm infants, they will be better able to assess, manage, and develop interventions specific to each dyad’s needs.£

## Case Study on Breastfeeding Challenges for the Preterm Infant

### Introduction

Promoting breastfeeding offers clinical challenges for Maternal Child Nurses and requires understanding the experience of the mother. Maternal Child Nursing can expand to meet the preterm infant's and the mother's unique needs, in collaboration with the lactation specialists at the institution and in the community. Opportunities for education of other health professionals regarding caring for both mother and infant abound. In caring for patients in this environment, the following case study provides nursing staff many points to consider and improve upon.

### Case Presentation of MH & BH\*

MH is a 32 year old Caucasian woman (GTPAL 11101) with a master's degree in education who has no significant contributing medical problems. Summarizing her prenatal risk factors: Age >30, Infertility x 18 months, overweight BMI 26-28, abnormal AFP screening 1/124 risk Downs Syndrome, peripheral edema at 30-32 weeks, resolved by bed rest, no increase in blood pressure. MH's infant, BH, experienced Intrauterine Growth Restriction (IUGR) at 30-32 weeks and was approximated to weigh 3 lbs 8 oz. At 34.5 weeks BH experienced a decrease in amniotic fluid and continued IUGR.

### Labor and Birth

MH's birth experience at a large metropolitan hospital was highly stressful, she described the nurses' attitude as "non-supportive: "She (the RN) seemed to know I was going to have a cesarean section, and didn't support me as I tried to have a normal birth." A cesarean-section was performed as a result of failed induction and fetal distress and BH was placed in infant special

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\* Initials were changed to protect patient confidentiality.

23 care. BH was born preterm at 34 ½ weeks gestational age, weighing 3 lbs. 4.5 oz and 16 inches in  
24 length.

#### 25 Experiences with Health Care Providers

26 MH wanted to breastfeed her daughter, and she described a non-supportive environment in  
27 the neonatal intensive care unit (NICU). “I wished that they (RNs) would have asked me what *my*  
28 goal was. I had to be the one to even bring up nursing (breastfeeding)—it wasn’t something they  
29 would ask.”§ MH initiated visits with the hospital lactation consultant as they were not offered to  
30 her. BH was discharged from the NICU eight days after birth, having thrived under the NICU  
31 nursing care.

32 In the NICU, BH was bottle fed, MH described BH: “She never learned to be patient and  
33 wait for the (milk) letdown or just to continue sucking...it (the bottle) was so much easier than the  
34 breast.” No concrete physical support for breastfeeding and no anticipatory guidance were  
35 provided prior to BH’s discharge from the hospital.

36 MH stated: “Our lives were going to be a lot different once we left the NICU—they (the  
37 RN’s) had to have known I was going to have problems with breastfeeding.” In addition,  
38 inconsistent feeding methods, such as mixing human and artificial milk, and alternating gavage  
39 and bottle feeding, added to the mother’s perception of lack of support for breastfeeding. MH  
40 perceived that the nurses’ attitude was that there was no difference between breast milk and  
41 formula. She states: “they knew she (BH) needed a certain amount of nutrition and they made sure  
42 she got that” whether it was formula or breast milk.

43 Although her family, friends, and her husband offered her emotional and psychological  
44 support, MH continued to face obstacles and still remained predominately on her own in pursuing  
45 her breastfeeding goal. She experienced nipple pain (7-8 on a scale of 0 *no pain* -10 *worse pain*

46 *she's ever experienced*) and low milk supply. Under the care of an independent International  
47 Board Certified Lactation Consultant (IBCLC) nurse practitioner (NP), MH maintained a tight  
48 breastfeeding and pumping schedule and kept strict records for the first three months. Typically,  
49 she nursed every three hours for an hour (½ hour on each breast), supplemented with 2 oz of  
50 formula and breast milk, pumped her breasts for an additional 1 ½ oz, and then provided nipple  
51 care for her sore breasts. By the end of this regimen, it was time to feed again.

52 The IBCLC NP prescribed mupirocin and nystatin ointments for nipple infection and  
53 triamcinolon for irritation to manage the nipple pain. MH was treated for low milk supply with  
54 oxytocin nasal spray and continued to keep careful records of her breastfeeding. A referral was  
55 made for ultrasound therapy to treat plugged ducts which cleared. No follow up phone call was  
56 made by the IBCLC regarding the effect of the medications or the ultrasound therapy. Finally, it  
57 was suggested that MH go on an elimination diet taking out all dairy to increase her low milk  
58 supply. These attempts were unsuccessful, and additional health care provider interventions during  
59 this period were inadequate.

60 The hospital lactation consultant followed up once by phone, briefly asking “how things  
61 were going” and then inquiring if she was going to rent the pump for another month. When MH  
62 asked about treating sore nipples, she recommended ice and said to call her if they were not better  
63 in one week. The hospital lactation consultant never followed up with MH.

64 At her OB/GYN follow up appointment one week after her cesarean-section, she saw a  
65 nurse practitioner for clogged ducts. Her OB/GYN never spoke with her regarding breastfeeding,  
66 except to say to her during a prenatal visit that the hospital where she was delivering would be  
67 supportive of her breastfeeding goals. No follow-up phone call regarding the clogged ducts was  
68 ever made. Additionally, at BH's pediatric office visits, MH found discrepancies between doctors

69 regarding breastfeeding knowledge and attitudes. The pediatric practice never followed up with  
70 her on her progress with breastfeeding.

71 When BH was two months old, MH became sick with the flu and her general practitioner  
72 prescribed oseltamivir phosphate and said “don’t nurse.” MH stopped nursing and slept for two  
73 days. Oseltamivir phosphate is an anti-viral for influenza A and B and is classified by Hale (2004)  
74 as a Lactation Risk Category (LRC) of L3, which is considered to be “moderately safe”.<sup>1</sup> When  
75 she felt better and decided that she still wanted to breastfeed, a friend referred her to a practice run  
76 by Dr. T.\* , a Medical Breastfeeding Specialist. MH went to the practice and saw a nurse  
77 practitioner RZ\* who advised her to take two days off from breastfeeding to allow her nipples to  
78 heal. MH explains she was asked “‘How much can you pump? What are you able to do?’, and  
79 when I said ‘twice a day’, the nurse practitioner RZ said, ‘great, pump twice a day’”. RZ  
80 developed a plan of care around MH’s schedule and needs.

81 In addition, the nurse practitioner prescribed motilium<sup>2</sup> for MH to help increase her milk  
82 supply. RZ advised her to formula feed and then go to the breast, feeding less formula each  
83 nursing session. Following this care, MH’s milk supply increased, her nipple pain resolved, and  
84 her nursing schedule became better integrated into her daily life. MH and BH did not receive  
85 adequate breastfeeding assistance until BH was 4 months old, after that time, she breastfed  
86 successfully to her original personal goal of 6 months.

## 87 Concluding Remarks

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<sup>1</sup> (Hale, 2004) An LRC of L3 means that although no controlled studies in breastfeeding women exist, there is a possible risk or controlled studies demonstrate only minimal non-threatening adverse effects. This drug should be given only if the potential benefit outweighs the potential risk to the infant (p.18).

\* *Initials were changed to protect practitioner confidentiality*

<sup>2</sup> (Hale, 2004) This product is unavailable in the USA but can be found in compounding pharmacies. Hale documents it as having a Lactation Risk Category (LRC) of L1 = *Safest*, meaning “it has been taken by a large number of breastfeeding mothers without any observed increase in adverse effects in the infant...it is considered the ideal galactagogue” (p.18, 259-60)



88 MH navigated the health care system with one goal in mind: to “go at least 6 months  
89 exclusively breastfeeding.” The experience of having a preterm infant was highly emotional for  
90 MH and her family. In retrospect, MH explained she “had to come to terms with the fact that she  
91 did not breastfeed exclusively.” She says, “I used to feel guilty, I felt like I couldn’t sustain her  
92 forty weeks in me and then out of me I couldn’t feed her, so I failed. But I have gotten over that  
93 because she is a happy baby, she smiles at me and coos at me. I never had depression, but I cried  
94 every day twice for 2 months.”

#### 95 Case Discussion

#### 96 Importance of breastfeeding in preterm infants

97 Current research clearly demonstrates the multitude of benefits that breastfeeding offers the  
98 preterm infant, including gastrointestinal, nutritional, immunological, developmental, and  
99 psychological benefits (Callen & Pinelli, 2005). The American Association of Pediatricians  
100 recognize the significant benefits of host protection and improved developmental outcomes  
101 compared to formula-fed preterm infants ("Policy statement. Breastfeeding and the use of human  
102 milk,," 2005). Stimulation of the immune system occurs with human milk, offering protection  
103 from infectious diseases, cancers, and metabolic disorders (Heining, 2001). Further, breastfeeding  
104 is associated with lower incidence of childhood disorders and diseases, including sudden infant  
105 death syndrome, allergies, diabetes type I and II, and childhood obesity (Crenshaw, 2005).

106 Breastfeeding the preterm infant is of the utmost importance due to their particular  
107 vulnerability to infections and their underdeveloped physiology. Human milk helps protect them  
108 from necrotizing enterocolitis (Strodtbeck, 2003) and other infections, digests easily, and provides  
109 the ideal nourishment as they rapidly develop and grow. However, the mother-preterm infant dyad  
110 faces immense obstacles in establishing successful breastfeeding within the hospital environment

111 and at home after discharge (Callen, Pinelli, Atkinson, & Saigal, 2005). In the case of MH, she  
112 encountered multiple social, institutional, and personal barriers to breastfeeding success.

113         Just as airway, breathing, and circulation (ABC) are nursing priorities for the preterm  
114 infant, breastfeeding as a process must move to the center of this vulnerable patient's care.  
115 Perhaps the addition of "D" for *Dyad care* should be added to these priorities. In our bottle  
116 feeding culture, many perceive "breastfeeding" to be the food product, human milk. However,  
117 clinicians must look at breastfeeding as the complex and dynamic relationship between a mother  
118 and her infant. The Maternal Child Nurses clinical priorities must expand to include nurturing  
119 the mother infant dyad for management of a successful breastfeeding relationship. Dyad  
120 promotion should have equal priority to managing the mother and infant's medical diagnoses.

121         Identifying critical transitions:

122         Preterm infants and their mothers have great difficulty with breastfeeding during critical  
123 transition stages. The transition for a mother from pregnancy to postpartum and the development  
124 of a good milk supply can be impeded by the stress of a preterm birth and lack of healthy infant  
125 breast stimulation. The infant must transition from in-utero circulation to extrauterine life and  
126 independent breathing, reflexes for milk transfer and survival must be developed, and eventually  
127 gavage feeding must transition to, ideally, exclusive breastfeeding. Crucial to these interdependent  
128 transitions is the comprehensive care of this dyad by health care professionals prenatally, in the  
129 hospital, and post-discharge of mother then of infant.

130         The literature on preterm infant breastfeeding has focused on the physiological benefits,  
131 tools for assessment of breastfeeding, barriers, milk supply, and the use of technologically based  
132 interventions (Callen & Pinelli, 2005; Callen et al., 2005). Further research is needed on the  
133 influence of comprehensive care on the difficult transition a preterm infant makes from bottle,

134 gavage, cup or syringe feedings to feeding at the breast. As seen in this case study, the dynamics  
135 of health care provider-patient interactions shapes the course of the breastfeeding experience much  
136 more than the use of a breast pump or nipple shield. In fact, when MH recounted her story, she  
137 focused on her struggle to get support from health care providers and to reconcile different  
138 approaches to care of the breastfeeding problems she and her infant encountered.

139 Various tools for assessing breastfeeding have been created and utilized. Two of these  
140 tools, LATCH and IBFAT, have been used to study preterm infants. Using the acronym  
141 “LATCH”, breastfeeding success in the NICU was measured by: latch, audible swallowing, type  
142 of nipple the mother has after stimulation, comfort, and hold (Elliott & Reimer, 1998). A study  
143 using the IBFAT tool developed by Mathews (to measure mature infant readiness to feed, rooting,  
144 fixing/latch, and sucking patterns) examined breastfeeding patterns of low birth weight infants  
145 after hospital discharge (Hill, Ledbetter, & Kavanaugh, 1997). This tool did not adequately assess  
146 the premature and low birth weight infant feeding patterns due to the specific needs of this  
147 population that are very different from term and mature infants. In addition, these tools made  
148 mothers anxious (Elliott & Reimer, 1998; Hill et al., 1997).

149 MH’s experience supports the need for more effective tools for assessment and greater  
150 specialized knowledge on the part of the nursing staff at the hospital.

151 Recommendations for clinical care

152 Barriers and Anticipatory guidance

153 Barriers to breastfeeding for preterm infants and their mothers have been well-cited in the  
154 literature, one review describing the number one barrier to breastfeeding in 3 out of 6 studies was  
155 inadequate milk supply (IMS) (Callen et al., 2005). The Hill-Aldag lactation model quantifies  
156 barriers in relationship to milk output (Hill, Aldag, Chatterton, & Zinaman, 2005). Hill’s research

157 over the past decade has differentiated between real and perceived IMS, and studied its presence in  
158 black and white women, and in low-income populations. The outcome of this research is the Hill-  
159 Aldag lactation model which can be used for appropriate anticipatory guidance during the entire  
160 course of care (Hill et al., 2005). Primary mediators that worked to MH's benefit included:  
161 education, ethnicity, income, lived with father of infant, intention to breastfeed and timing of that  
162 decision. However, physiological stress and psychological distress and the combined effect of  
163 secondary mediators such as: lack of initiation and frequency of breast stimulation, lack of  
164 kangaroo care, and mismanaged supplementation, all contributed adversely to her milk output.

165 While the focus of the Hill-Aldag lactation model is the mother, a model of "The autocrine  
166 control of milk-production by the healthy baby" focuses on the infant's responsibility for milk  
167 production (Smillie, Campbell, & Iwinski, 2005). Clinicians, when offering lactation support,  
168 must take into account the infant's primary role in stimulating lactation and determining milk  
169 supply. A preterm infant that is not providing adequate nipple stimulation during the critical early  
170 period of breastfeeding initiation, places the mother at risk for impaired lactation and/or early  
171 cessation of breastfeeding (Smillie et al., 2005). Studies have shown the importance of "ideal  
172 target milk volumes" for mother's of preterm infants that should be 750-1000 ml/day (Meier,  
173 Engstrom, Mingoelli, Miracle, & Kiesling, 2004). Those working with the mother of the preterm  
174 infant should emphasize the importance of early breast stimulation, including milk removal by  
175 pump or hand expression. The stress experienced by parents of preterm infants may have an effect  
176 on their willingness to pump or express milk for their infant whose outcome is questionable, and  
177 maternal nurses empathetic support can make all the difference for breastfeeding success.

178 Discharge Planning

179           The most difficult critical transition is the infant's discharge to home. Discharge planning  
180 should be initiated at the time of admission to the NICU. Ideally, the parents are able to stay 1 or 2  
181 nights prior to the infant's discharge from the NICU to home, so that any challenges with  
182 breastfeeding can be recognized (Wight, 2004). Nursing responsibility to the mother-preterm  
183 infant dyad starts with special encouragement during labor and birth and in the NICU. In the  
184 immediate postpartum period, the Maternal Child Nurses should discuss breastfeeding options  
185 with the mother, including the need for early breast stimulation, and develop a plan of care.  
186 Finally, home care, collaboration and follow up are essential to the successful continuation of  
187 breastfeeding the preterm infant. The United States discharges preterm infants much earlier than  
188 other parts of the world where discharge of heavier and developmentally more advanced infants  
189 who are further established in their breastfeeding occurs (Wight, 2004).

190           Health professionals' support of breastfeeding has an effect on the dyad's success.  
191 Examining patient's perspective of nurses' breastfeeding support, a study found that the  
192 attitudes, knowledge, commitments and perseverance of perinatal nurses were what truly  
193 mattered to patients (Gill, 2001). Hospitals tend to model the bottle-feeding culture of the  
194 United States, and women perceive this often non-verbal behavior as a lack of support for  
195 breastfeeding by health care professionals.

196           Maternal Child Nurses are in a unique position to empower the infants' parents with  
197 referrals, knowledge about the techniques for adequate breast stimulation and milk transfer, and  
198 assessment of preterm infant feeding cues, satiety and growth. In addition, parents must be  
199 actively encouraged to ask questions about breastfeeding, supplementation, and infant care related  
200 to their breastfeeding relationship. Responsibility of breastfeeding falls on the shoulders of all  
201 health care providers, but Maternal Child Nurses are able to coordinate and oversee discharge

202 planning which takes into account the lack of coordinated community resources for lactation  
203 support.

204 Lack of Continuity of care: Collaboration between health care providers

205 Once the infant is discharged, communication between health care providers is limited.

206 MH's breastfeeding experience demonstrated inconsistent care with poor follow up on the part of  
207 most health care providers, including nurses. Many obstacles prevented individual nurses and  
208 health care providers from providing effective care to MH and her infant. There was no protocol  
209 in place in the NICU for encouraging breastfeeding long term and the hospital interventions may  
210 have made later breastfeeding more difficult. In MH's experience and from her perspective, the  
211 hospital did not follow up adequately, nor support breastfeeding after discharge. Neither the  
212 OB/GYN practice nor the pediatric practice appeared to have protocols to support and follow up  
213 on breastfeeding. This exposure to myriad practitioners without adequate backgrounds in lactation  
214 management impairs comprehensive care and adversely affects breastfeeding outcomes. Health  
215 care professionals receive little or no education on lactation management, and although their  
216 intention to support the breastfeeding mother is usually well placed, their behavior does not always  
217 demonstrate this (Bernaix, 2000). Primary care practitioners, obstetricians, and pediatricians lack  
218 time, confidence and expertise in caring for these breastfeeding patients (Taveras et al., 2004).

219 Maternal Child Nurses can provide anticipatory guidance in these areas. More research is  
220 needed on the importance of health care team collaborations and breastfeeding outcomes for these  
221 vulnerable infants. The unique needs of breastfeeding mothers of preterm infants have been well  
222 described (Callen & Pinelli, 2005; Callen et al., 2005). Clinicians need an increased understanding  
223 of milk transfer for a preterm infant, to adequately develop interventions for this vulnerable

224 population (Hurst, 2005). Communication between practitioners and with the dyad can make all  
225 the difference for breastfeeding success.¥

226 Summary and Conclusions:

227       BH gained weight in the hospital and was discharged after only eight days in the NICU,  
228 which is a testimony to excellent nursing care. However, nursing staff did not initiate support nor  
229 adequately encourage the breastfeeding mother-infant dyad. The mother received limited  
230 education and anticipatory guidance; her hospital experience reflected a non-supportive,  
231 breastfeeding unfriendly environment. Similarly, post discharge MH did not receive the necessary  
232 encouragement from her health care providers to breastfeed successfully. MH did finally find a  
233 practice specializing in breastfeeding problems, and once under the care of the physician and nurse  
234 practitioner at this practice, many of her breastfeeding problems resolved and her experience  
235 improved immensely. However, this practice is unique nationally, and other changes must be  
236 made within hospital and community settings to better meet the needs of this vulnerable patient  
237 population.

238       Tools can be developed to assess and study preterm infant breastfeeding patterns. More  
239 research needs to be done on these patterns in order to equip nurses and health care providers with  
240 the information they need when caring for preterm infants. Additionally, nursing staff can work  
241 together to learn about caring for mothers who are breastfeeding preterm infants. The key to their  
242 breastfeeding success is more effective nursing staff support, expertise on preterm infant feeding  
243 patterns, thorough teaching, and follow up on the part of nursing and community health care  
244 providers. Institutions can continue to experiment with protocols and programs to help establish  
245 and successfully maintain breastfeeding in the preterm infant.

246           As nurses continue to learn about the critical transitions for preterm infants, they will be  
247 better able to assess, manage, and develop interventions specific to each dyad's needs.£  
248 Community health care professionals in all areas would benefit from increasing their knowledge  
249 and expertise in lactation management, and recognition of when to refer. Further research on  
250 collaborative care post-discharge is necessary, with specific suggestions for protocols, follow-up,  
251 and communication methods. Finally, Maternal Child Nurses can be encouraged and supported by  
252 administration to become CLC/IBCLCs and/or have IBCLCs on staff on the Maternal Child units  
253 including the NICU and nursery.

254           In conclusion, continued dialogue needs to occur to prioritize breastfeeding, or protection  
255 of the “dyad”, as a major priority for preterm infants and mothers. On the maternity units, the  
256 ABC's of patient care could include a “D” for *Dyad-promotion*. Making positive changes to  
257 support and encourage this life-saving relationship between mother and infant should be a goal for  
258 every health care professional.



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