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# Education for WIC Peer Counselors About Breastfeeding the Late Preterm Infant

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# 1 EDUCATION FOR WIC PEER COUNSELORS ABOUT BREASTFEEDING THE LATE 2 PRETERM INFANT

## 3 4 INTRODUCTION

5  
6 Approximately 7% of all infants in the United States are born between 34 and 36  
7 completed weeks gestation. Categorized as late preterm, they comprise 71% of all preterm  
8 births.<sup>1</sup> Although breastfeeding has benefits that are particularly important for this vulnerable  
9 population, large cohort studies consistently demonstrate that breastfeeding initiation, duration,  
10 and exclusivity rates for infants born before 37 weeks are significantly lower than for those born  
11 at term.<sup>2</sup> Late preterm infants demonstrate feeding behaviors that differ from full-term infants.<sup>3,4</sup>  
12 Their immature suck and sleepiness can lead to delayed lactogenesis and an insufficient milk  
13 intake, placing them at risk for poor weight gain, dehydration, and jaundice and increasing the  
14 likelihood of hospital readmission in the first 2 weeks.<sup>3,4</sup>

15 Mothers who want to exclusively breastfeed may find themselves unprepared for the  
16 challenges presented by their developmentally immature infants.<sup>5,6</sup> These mothers and infants  
17 often transition from hospital to home with a complex feeding plan that involves first latching  
18 the infant for a limited time using a nipple shield, then offering some expressed human milk or  
19 infant formula, and following-up with milk expression using a breast pump.<sup>4</sup> Mothers often find  
20 this feeding regimen to be overwhelming and difficult to manage.<sup>5,6</sup> On-going breastfeeding  
21 support after discharge, both professional and peer, is essential for this vulnerable population of  
22 mothers and infants.<sup>5,6</sup>

23 The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)  
24 breastfeeding peer counselors can play an important role in providing needed social support for  
25 mothers breastfeeding a late preterm infant.<sup>7</sup> Evidence suggests that contact with a WIC peer  
26 counselor facilitates women's decisions to initiate and continue breastfeeding.<sup>7</sup> Peer counselors

1 are WIC clients who have been recruited and hired to provide breastfeeding support to current  
2 clients.<sup>7,8</sup> They have breastfed at least one child and ideally are the same racial/ethnic  
3 background as the mothers they support.<sup>8</sup> They offer basic breastfeeding information,  
4 encouragement, and emotional support to mothers via phone, text, clinic visits, hospital and/or  
5 home visits and are available outside of normal WIC clinic hours.<sup>7,8</sup> Their role is to reinforce  
6 breastfeeding recommendations and promote the benefits of breastfeeding for mothers and  
7 children. They work with a WIC designated breastfeeding expert who assists with breastfeeding  
8 management problems that are outside their scope of practice.<sup>8</sup>

9 WIC peer counselors receive specialized training through the *Loving Support* program  
10 about best practices related to healthy term infants.<sup>8</sup> However, late preterm infants, due to their  
11 immaturity, need different evidence-based practices to establish breastfeeding.<sup>4,9</sup> Understanding  
12 these differences can help peer counselors offer more effective support to their clients. The  
13 purpose of this report is to present information about breastfeeding and late preterm infants that  
14 can supplement the *Loving Support*© peer counseling curricula currently used to educate WIC  
15 peer counselors.<sup>8</sup>

## 16 DISCUSSION OF EDUCATION

17  
18 The following content was developed to facilitate WIC peer counselors' knowledge of  
19 breastfeeding the late preterm infant. Topics discussed include characteristics of the late preterm  
20 infant and benefits of human milk; typical infant behaviors that affect breastfeeding; lactation  
21 technologies that help establish a milk supply that supports infant growth; mothers' experiences,  
22 and warning signs that need follow-up.

### 23 **Characteristics of the Late Preterm Infant**

1           During the final 4 to 6 weeks of pregnancy, fetuses experience a critical period of rapid  
2 brain growth and maturation of organ and body systems to ready them for life outside the womb.  
3 Glycogen stores increase in their livers; subcutaneous tissue and brown fat stores develop;  
4 muscle tone increases, and passage of maternal antibodies through the placenta increases.<sup>4,8,9</sup> The  
5 brain experiences significant growth during this period with a 5-fold increase in white matter and  
6 33% growth in brain volume.<sup>10</sup> Figure 1 depicts this rapid brain growth in the final weeks of  
7 pregnancy.<sup>10</sup> These changes prepare newborns for breastfeeding, which requires stamina, an  
8 ability to regulate sleep/awake cycles, and a coordinated suck and swallow.<sup>4,9,11,12</sup>

9           Human milk has properties that benefit these immature newborns.<sup>9,12</sup> For example, the  
10 composition of their mothers' milk is specific to their needs as late preterm infants. Nutritional  
11 and anti-infective components are more highly concentrated in their milk and it is easier to  
12 digest. The milk contains higher levels of nitrogen, protein, sodium, chloride, and lipids (which  
13 also provides long-chain poly unsaturated fatty acids), all of which aid in the development of an  
14 infant's brain and nervous system.<sup>4,9</sup> Human milk also promotes the development and maturation  
15 of the healthy intestinal microbiome essential to life-long digestive health.<sup>13</sup>

16           Human milk and breastfeeding are important to the future health of late preterm infants.  
17 Unfortunately, their immaturity influences their ability to effectively breastfeed. Because they  
18 have difficulty staying awake and coordinating their suck and swallow, their milk intake may be  
19 insufficient to support growth.<sup>4,9,12</sup> These behaviors can interfere with lactogenesis II or copious  
20 milk production. Occurring 2 to 3 days' post birth, this delay is often caused by lack of nutritive  
21 sucking that is needed to stimulate the prolactin hormone and feedback inhibitor of lactation,  
22 affecting milk production.<sup>12,14</sup> These immature breastfeeding behaviors often result in a cascade  
23 of events that ends in hospital readmission for dehydration or jaundice (See Figure 2). By better

1 understanding typical behaviors of late preterm infants, WIC breastfeeding peer counselors can  
2 provide mothers with important informational and emotional support.

### 3 **Typical Late Preterm Infant Behaviors**

4       Typical newborn behaviors exhibited by late preterm infants can affect breastfeeding  
5 outcomes. Understanding their feeding cues can be complicated by differences in infant  
6 gestation, development, and individual characteristics.<sup>5</sup> In the early postpartum period they may  
7 act like full term infants and appear to be breastfeeding well during the short time they are in the  
8 hospital.<sup>4</sup> However, their immaturity predisposes them to behaviors that affect their ability to  
9 effectively breastfeed, such as excessive sleepiness and short feedings.<sup>3-5,9,15,16</sup> High energy  
10 demands and low energy stores decrease their feeding stamina, resulting in short feedings due to  
11 fatigue rather than being satiated.<sup>3-5,9,16,17</sup> This insufficient milk intake interacts with decreased  
12 alert, awake periods.<sup>4,11, 15-17</sup> Parents often struggle to make sense of their infant's behavior<sup>5,6,10</sup>  
13 and may interpret these behaviors as signs of ineffective breastfeeding.<sup>4</sup> Their immaturity impacts  
14 their ability to suck effectively.<sup>12,15,18</sup> Late preterm infants typically exhibit low muscle tone and  
15 underdeveloped cheek pads, which affects their ability to maintain sufficient intra-oral pressure;  
16 as a consequence, they slip on and off their mother's nipple during feedings.<sup>5,6,18</sup> These behaviors  
17 contribute to a disorganized nonnutritive sucking pattern that affects their ability to transfer an  
18 adequate amount of milk from the breast.<sup>12,17</sup> These *normal* late preterm behaviors contribute to  
19 suboptimal breastfeeding, characterized by an insufficient amount of nourishment for infant  
20 growth and maternal difficulty with milk supply.<sup>4,17</sup>

### 21 **Use of Lactation Technologies**

22       Continued use of a hospital grade pump, nipple shields, and a baby weight scale become  
23 a way of life until the infant reaches 40 to 44 weeks gestational age and is working toward

1 exclusive breastfeeding.<sup>4</sup> The three goals for managing breastfeeding in this transition are  
2 “protecting milk volume, ensuring adequate milk intake during breastfeeding, and facilitating  
3 milk intake.”<sup>4</sup> Milk volume is best protected by continued use of a hospital grade breast pump  
4 until the infant is exclusively breastfeeding.<sup>9,19,20</sup> A hospital grade breast pump is used to mimic  
5 the breastfeeding patterns of a healthy full term infant and stimulate milk production. The pump  
6 is set at the maximum level of comfort with no pain; the mother’s nipple should be centered in a  
7 correctly fitted breast shield and should move easily with very little areola in the flange tunnel  
8 when pumping.<sup>4</sup> WIC peer counselors can offer important emotional support to mothers in the  
9 arduous task of pumping.<sup>6</sup> Mothers need to understand the importance of routinely using the  
10 hospital grade breast pump and gradually discontinuing pumping when their infants are  
11 exclusively breastfeeding to ensure an adequate milk supply.<sup>4, 19,20</sup> Mothers who have difficulties  
12 can be referred to a certified lactation consultant at their WIC clinic or infant’s birth hospital.<sup>8</sup>

13 Nipple shields can effectively facilitate milk intake during breastfeeding.<sup>4,9,18</sup> Adequate  
14 milk consumption is a challenge because late preterm infants have difficulty maintaining an  
15 effective latch and decreased stamina and alertness.<sup>5,11</sup> Nipple shields, which are available in  
16 different sizes, create an intra-oral vacuum that help the infant remain latched and transfer milk  
17 from the breast.<sup>4,18</sup> Mothers need reassurance that use of the nipple shield is temporary and  
18 reminded to not prematurely discontinue its use.<sup>4,18</sup> Early supplementation is advised to ensure  
19 adequate growth until the late preterm infant can exclusively breastfeed.<sup>4,9</sup> The hospital  
20 discharge feeding plan often includes triple feeding, which can involve following breastfeedings  
21 with a supplement of expressed human milk or infant formula.<sup>9,21</sup> However, it is difficult to  
22 estimate how much the infant needs because usual indicators like audible swallows and satiety  
23 are inaccurate for late preterm infants.<sup>4,21-23</sup> Meier et al.<sup>4</sup> strongly recommend that parents have

1 access to an in-home baby scale to accurately measure intake and guide supplementation  
2 needed.<sup>4,9,22-23</sup> Mothers may find the day to day work of pumping and using a nipple shield to be  
3 a burden.<sup>5,6,21</sup> By understanding the rationale for using these tools, WIC peer counselors can  
4 encourage mothers to persevere until their infant is effectively breastfeeding.

### 5 **Mothers' Experiences**

6 Mothers who are breastfeeding a late preterm infant experience feelings of uncertainty,  
7 anxiety, failure and exhaustion. They feel unprepared for their infants' feeding difficulties and  
8 the intense work of breastfeeding.<sup>5,6,11,24, 25</sup> Health care providers often minimize the impact of  
9 gestation and fail to provide mothers with sufficient information and support about potential  
10 problems.<sup>5,6,11,22,24</sup> This collision of reality with expectations can cause parental stress; mothers  
11 may not meet their goal to exclusively breastfeed, which can increase their risk for depression  
12 and a delay in bonding with their infant.<sup>5,25</sup> Informed emotional support is crucial.<sup>5,6</sup>

### 13 **Potential Warning Flags**

14 WIC breastfeeding peer counselors may be the first providers to recognize warning signs  
15 that warrant a call by the mother to the infant's healthcare provider. For example, excessive  
16 sleepiness while at breast or a yellow skin color can be indicators that the infant is not receiving  
17 enough human milk.<sup>26</sup> Other red flags include having less than 6 wet diapers and 2 yellow stools  
18 per day after day 5 and a lethargic infant who is difficult to awaken for feedings.<sup>26</sup> To identify  
19 potential breastfeeding problems and facilitate early intervention, the American Academy of  
20 Breastfeeding Medicine<sup>26</sup> recommends that "the late preterm infant should have weekly weight  
21 checks until 40 weeks post conceptual age or until he or she is thriving."

22 The following questions can be a helpful guide to the mother's perceptions about  
23 breastfeeding her infant. How does your infant look? Is there anything that looks different to

1 you? Does your infant stay awake while eating? Or do you have to coax him/her to stay awake  
2 through the feeding? How long does a feeding take? How are you feeling about breastfeeding?  
3 How often are you pumping? Is pumping comfortable for you? Are you using a nipple shield?  
4 How is that going? How much supplement is your infant eating? Is it expressed human milk or  
5 formula? Is your infant's weight being monitored by a health care provider or a WIC IBCLC?

## 6 **IMPLICATIONS FOR RESEARCH AND PRACTICE**

7  
8 The information presented in this report could be used to enhance the breastfeeding  
9 support provided by WIC peer counselors to this population (See Table 2). Three groups of WIC  
10 peer counselors have received this education through a presentation by the first author; their  
11 responses to an informal survey indicated that the education increased their confidence in  
12 supporting these mother/infant dyads. Further research, however, is needed to evaluate the  
13 effectiveness of this education in improving maternal/infant outcomes (e.g. breastfeeding rates,  
14 mothers' breastfeeding self-efficacy, and infant hospital readmissions) and increasing the WIC  
15 peer counselors' confidence in their ability to provide information and emotional support to this  
16 population. Since conflicting information from trusted sources is a source of stress for new  
17 mothers, WIC breastfeeding staff could partner with community hospitals to develop consistent  
18 breastfeeding messages for this population.<sup>2,4</sup> Establishing and continuing breastfeeding can be  
19 complex and difficult for mothers of late preterm infants; ongoing support in the community is  
20 essential.<sup>6,7,24</sup> Educating WIC peer counselors about breastfeeding these infants may enhance the  
21 support they offer mothers and improve their breastfeeding outcomes.

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## Figure Legends

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**Figure 1.** Development of the Human Cerebral Cortex.<sup>10 \*</sup>

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**Figure 2.** Near-term Infant (e.g. late preterm) Breastfeeding Cascade<sup>3</sup>

\* Near-term Infant (e.g. late preterm)

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