

The Breastfeeding Journey of a Preterm Baby



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This article describes the footsteps to exclusive breastfeeding of a mother who had delivered a preterm baby in a regional hospital. Highlights include how the mother:

- initiated lactation and breastfed her baby in a Neonatal Intensive Care Unit
- continued breastfeeding after her baby had been discharged home

Day1: Zenas with respiratory

Support



Karen was a first time mother admitted to the Obstetric Department of a regional hospital at 31 weeks' gestation due to premature rupture of membrane. She gave birth to a baby girl, Zenas, at 32 weeks by normal vaginal delivery, weighing 2.07 kg. Zenas was admitted to the Neonatal Intensive Care Unit (NICU) for observation and respiratory support due to mild respiratory distress. She was able to breathe spontaneously in room air on Day 2 and stayed at the NICU for 9 days before being transferred to the Special Care Baby Unit (SCBU). She was discharged on Day 24.

How did the mother initiate lactation and breastfeed her preterm baby in the NICU and SCBU?

Karen had planned for breastfeeding since early pregnancy. When Zenas was born much earlier than expected, Karen experienced disappointment, frustration, fear and guilt. She was very worried about Zenas and was not confident in breastfeeding her.

In the postnatal ward, Karen was supported by a team of midwives, lactation consultants and supporting staff. She was counselled by the team through active listening and with practical support. The lactation consultant explained to Karen how she could help Zenas, in particular the immunological and nutritional value of breastmilk for preterm babies was emphasised. Karen was refocused and directed towards activities to maximize her unique role in supporting her baby. She was taught to initiate lactation by manually expressing breastmilk – she was helped to express and collect 1 ml of colostrum in a syringe **within 6 hours post-delivery**. This was delivered to the NICU immediately and given to Zenas when she was ready for her first feed. Karen was further coached on how to do **warm compress and massage to facilitate the expression of colostrum**. She was encouraged to hand express both breasts for 30 minutes every 3 hours, including at night time; and was instructed on how to collect, label and store the expressed milk.

Karen suffered from antenatal anaemia and primary postpartum haemorrhage requiring blood transfusion on Day 2. To make expression of breastmilk less effortful for her, Karen was provided with an electric hospital grade double breast pump. She was coached how to choose the correct flange size and use the pump and collection kit. To maximize milk removal, she was taught to do hand-on pumping (breast compression during pumping, and/or hand expression and breast massage in between, as indicated). Hand-on pumping has been shown to significantly increase the amount of milk expressed at each session and the fat content of the milk, due to complete breast emptying¹⁻³.

Day 10 (maturity of 34⁺¹wk): Tube feeding with EBM exclusively



With full commitment, Karen had been pumping her breast every 4 to 5 hours and was ready to be discharged home on Day 4. She was encouraged to log when and how much milk she had pumped in order to maximize her motivation to continue pumping. With the help of the log sheet, the lactation consultant and neonatal nurse were able to effectively assess and monitor Karen's breastmilk pumping and provide timely and continual support, either when she visited the NICU or through phone follow-up. When milk supply became more stable, Karen was advised to collect the hind milk in order to boost Zenas' caloric intake due to the higher concentration of lipids, providing a readily absorbable supplement with high calorie, low volume and low-osmolality¹, ⁴. By Day 10, Zenas was fed on breastmilk exclusively.

Both parents visited Zenas daily at the NICU. The pediatricians kept them informed of Zenas' progress and the nurses helped to relieve them of their stress and promote their bonding with Zenas. When Zenas's condition allowed, Karen was encouraged to hold her and perform massage. She was taught to do skin-to-skin contact and Kangaroo care. With only the diaper on, Zenas was held mostly upright and snuggled between Karen's breasts and hands, covered by a blanket. Karen was excited with her first skin-to-skin contact with Zenas. Evidence shows that Kangaroo care brings tremendous benefits to both the baby and parents. It helps stabilise the baby's heart rate, regularise breathing, improve oxygen saturation, reduce calorie expenditure, facilitate longer sleep, increase weight gain, promote brain development, decrease crying and maintain a longer period of alertness. For parents, it helps to increase bonding, promote confidence in caregiving and feeling of control, relieve stress, increase mother's milk production and enable earlier discharge from hospital⁵.

Day 22 (maturity of 35⁺⁶wk): Full oral feeding



On Day 17 when Zenas reached the maturity of 34 weeks and her medical condition was stable, she was started on oral-motor training and a trial of oral feeding. On Day 20, Zenas could complete one feed by bottle.

How did the mother continue breastfeeding after her preterm baby had been discharged?

Day 24, an exciting moment of the first direct breastfeeding



On Day 24, Zenas was ready for discharge. Karen and Zenas were seen by the lactation consultant to prepare for transition from bottle feeding to direct breastfeeding. She reminded Karen about the importance of skin-to-skin contact and showed her how to do oral stimulation while making it an enjoyable social experience to reduce the stress on Zenas. She was taught how to breastfeed with proper attachment and positioning, including the semi-reclined position. The semi-reclined position facilitates optimal attachment by eliciting a gravity-pulled chin and a forward-dropping tongue as well as primitive neonatal reflex to grasp the breast¹, ⁴. She was taught the dancer hand position to optimize support of the baby's iaw and the breast¹, and to observe the suckling-swallowing cycle during effective milk removal.

Karen expressed feelings of fulfillment and pride at her first breastfeeding attempt. A post-discharge feeding plan was discussed with Karen. This included observation of feeding and satiety cues, signs of nutritive suckling, and monitoring of urine and bowel output, as well as gaining family support.

Karen was advised to attend the Maternal and child Health Centre (MCHC) soon after discharge to monitor Zenas' feeding, weight gain and jaundice. She received further coaching in fine-tuning her breastfeeding position and attachment in the MCHC.



Day 34, learning the side-lying position at the lactation clinic

A few follow-up visits at the lactation clinic were arranged for Karen and Zenas. The father was encouraged to join the sessions as well. He was noted to be actively participating and was praised for his efforts in supporting Karen and Zenas on breastfeeding and baby care. He made innovative arrangements for Karen to breastfeed Zenas in a comfortable environment and provided Zenas with Kangaroo care himself. Karen was seen to be competent in direct breastfeeding, with Zenas having very good weight gain. In view of the good progress, Karen was reminded to reduce pumping gradually to avoid the possible complications of over-supply of milk. She was also encouraged to attend a peer support group for breastfeeding mothers with an aim to sustain breastfeeding. Karen was grateful to the concerted efforts of the committed multidisciplinary team in providing her with professional and compassionate support in milk expression and sustaining exclusive breastfeeding.

Is breastfeeding helping or over-loading a preterm baby and the mother?

The intestinal mucosal barriers of preterm babies are relatively immature compared to those of full-term babies and older children. Preterm babies are therefore more susceptible to various insults, including microbial actions. Unlike formula milk, breastmilk contains components that enhance maturation of the gut. Trophic feeding with breastmilk also facilitates growth of protective gut flora and improves meconium emptying. It was found that preterm babies fed with breastmilk had lower rates of necrotizing enterocolitis and possibly, retinopathy of prematurity. It was also shown that cognitive development was enhanced with at least 4 months of breastfeeding, especially among preterm babies⁴.

It has been widely assumed that bottle feeding is less tiring for preterm babies who may need to be trained or tested on their ability to bottle-feed prior to direct breastfeeding. However, evidence shows that **preterm babies are physiologically ready to breastfeed prior to bottle-feed. They demonstrate better oxygenation during direct breastfeeding as compared with feeding from a bottle.** They exhibit less desaturation, bradycardia, temperature instability and apnea. Preterm babies can pace their feeding by controlling the milk flow and there is time for breathing between suckling. Preterm babies do not spend more energy at the breast than bottle feeding, and longer feeding time at the breast does not increase resting energy expenditure.⁴, ⁶

On the maternal side, success in breastfeeding the preterm baby allows the mother to gain a feeling of control over the overwhelming situation and confers a sense of identity. The release of oxytocin accompanying breastfeeding (or breastmilk pumping) helps reduce maternal stress and improves mother-baby attachment⁴. In one study, lactation counselling was offered to 196 mothers with preterm babies. All mothers did not report an increase in anxiety regardless of their initial feeding plan and were glad that health care workers helped them in expressing milk⁴. In sum, **breastfeeding a preterm baby offers enormous advantages to both the mother and the baby**.

Many NICUs are encouraging direct breastfeeding as soon as the preterm babies show the ability to suckle. They would be engaged in kangaroo care and non-nutritive suckling at an emptied breast during gavage feedings. These experiences help them progress towards direct breastfeeding⁴. In our case, had the medical condition allowed, Zenas could have been assessed earlier for suckling ability and offered the experience of non-nutritive suckling at Karen's breast. Alternative feeding such as cup feeding and finger feeding, instead of bottle feeding, could also have been tried had supplemental feeding been required. Table 1. Karen's milk expression and Zenas's feeding and body weight from birth till Day 74

Day of life	Frequency of	Milk volume per	Body	Baby's daily intake,
	expression	expression session	weight	feeding mode and
			(kg)	(% of BM per daily intake)
<6 hours after birth	EBMx1	1ml	2.07	NPO
(NICU)				
Day 1	2 times/day	1-1.5ml each	2.01	4ml Q3H, R/T, (75%)
Day 2	3 times/day	5-15ml each	2.016	7ml Q3H, R/T, (42.6%)
Day 3	3 times/day	5-10ml each	2.01	12ml Q3H, R/T, (20.7%)
Day 4	7 times/day	5-30ml each	2.1	17ml Q3H, R/T, (40.5%)
Day 5	7 times/day	40-50ml each	2.18	23ml Q3H, R/T, (71.9%)
Day 10 (SCBU)	6 times/day	60-70ml each	2.26	45ml Q3H, R/T, (EBF)
Day 17	6 times/day	60-70ml each	2.46	45ml Q3H, R/T, (EBF)
				(Start oral training)
Day 20	6 times/day	70-90ml each	2.58	45ml Q3H, (EBF)
				R/T and bottle x1
Day 24 (Discharge)	5-6 times/day	150-300ml each	2.74	70ml x 6, by bottle, (EBF)
Day 38	5-6 times/day	90-120ml each	3.315	DBF x 2-3
				90-120ml x 6, by bottle, (EBF)
Day 48	5-6 times/day	90-120ml each	3.625	DBF x 3-4
				90ml x 5-6, by bottle, (EBF)
Day 65	5-6 times/day	90-120ml each	4.08	DBF x 6
				90ml occasionally by bottle, (EBF)
Day 74	4-5 times/day	90-120ml each	4.56	DBF including night time,
				supplement EBM based on baby's
				feeding cues, (EBF)

R/T=Ryles tube feeding; DBF= Direct Breastfeeding; Q3H= Every 3 Hours; EBF = Exclusive Breastfeeding

% of BM per daily intake = (expressed breast milk \div total milk intake) x 100%

Key Message:

- Mothers with babies in NICU are emotionally vulnerable; health care workers providing breastfeeding support should be sensitive to their needs.
- Baby friendly hospital practices are vital in determining success in breastfeeding preterm babies.

These include:

- o facilitating early breastmilk removal (within 6 hours after birth) and frequent milk expression o encouraging early skin-to-skin contact and suckling
- o involving both parents in baby feeding planning and practices
- Evidence shows preterm infants are better oxygenated and consume less energy when feeding at the breast than from a bottle.
- 在深切治療病房的新生兒的母親一般在情感上比較脆弱。提供母乳餵哺輔導和支援的醫護人員應特別關注她們這方面的需要。
- 愛嬰醫院的措施對於能夠成功以母乳餵哺早產兒至關重要,當中包括:
 - o 協助儘早提取乳汁 (在產後6小時內) 和頻密擠奶
 - o 鼓勵儘早與嬰兒肌膚接觸和讓他吸吮
 - o 讓父母親直接參與安排和負責餵哺嬰兒
- 證據顯示早產嬰兒於直接吸吮母乳時,比較用奶瓶餵哺時含氧較佳,能量消耗亦較少。

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P.8



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