**Milk Production and Preventing Clogged Ducts & Mastitis**

Char McMullen

University of Alaska Fairbanks

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Dr. Don Larson

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 Breastfeeding a newborn can be an overwhelming task for a new or seasoned mother. Every baby is different and there is a learning curve for executing good techniques to establish a good milk flow, a good latch, and preventing clogged milk ducts and mastitis. Knowledge of how milk production is induced and maintained can help promote a positive breastfeeding experience. That, in conjunction with breastfeeding techniques from a lactation consultant and knowledge of how to prevent problems that may affect breastfeeding will optimize a breastfeeding journey.
 Lactation is synthesized, and milk comes from the mammary glands, which are modified sweat glands. During pregnancy, the breasts prepare for breastfeeding due to elevated estrogen, growth hormone, cortisol, and prolactin. Prolactin levels increase throughout pregnancy and at the end of pregnancy are high enough to promote lactation if not for estrogen and progesterone as well as other hormones from the placenta stall lactation until birth and placental expulsion. After birth, mechanical stimulation such as baby suckling stimulates nerves in the areola and depresses dopamine production which stimulates the hypothalamus and posterior pituitary gland to release oxytocin and will increase prolactin levels. Oxytocin allows the mammary alveoli to the lactiferous ducts and sinuses so that they can be released at the nipple in the let-down reflex. The more a baby suckles at the breast and feeds, the more oxytocin and prolactin are produced which promotes the production of milk in a positive feedback loop (Betts et al, 2022).

 Milk production also depends on how much milk a baby extracts from a breast during feeding and how frequently they feed (Kent, 2007). Milk composition also changes from the initiation of breastfeeding, with protein rich colostrum secreting in the first two to three days, followed by transitional milk and then mature milk. Over time prolactin levels change and decrease to pre-pregnancy levels and production of milk decreases and stops when the baby weans from breastfeeding.

 Breastfeeding provides babies with passive immunity for an extra boost of protection after birth as well as nutrients. Mothers can bond with their babies and a baby’s suckling stimulates uterine contraction so that it can return to pre-pregnancy size. Breastfeeding technique can help promote successful breastfeeding and a good milk flow. If a mother and baby are struggling to establish breastfeeding, they may be referred to a lactation consultant to aid them in breastfeeding techniques that may help with breastfeeding success. A lactation consultant can help a new mother improve latch, position baby for better breastfeeding, and educate a mother about lactation, increasing milk supply, and issues with breastfeeding such as tongue and lip ties. Lactation consultants will often talk to new parents about the benefits of breastfeeding, tips for success, and even how to prevent issues such as engorged breasts, clogged milk ducts, and mastitis (Wagner, 2022).

 Clogged milk ducts often occur when milk ducts (lactiferous ducts) are not emptied properly in cases such as infrequent feeding, improper latch, or pressure in the part of the breast where the clog occurs. This causes an inflammatory response in which some symptoms are pain & tenderness, a localized lump tender to the touch, warmth near the site of the clogged duct or redness. If not resolved, a clogged milk duct can lead to an infection called mastitis. Clogged ducts are treated by frequent feeding and changing feeding positions, hand expression of milk, breast massage near the clogged duct towards the nipple, and heat packs. Ensuring frequent scheduled breastfeeding sessions, proper latching, and emptying of the breast can help prevent clogged milk ducts.

 Mastitis is another breastfeeding related illness that causes inflammation in one or multiple parts of the breast that can progress to a bacterial infection. Mastitis typically occurs in the earlier days of breastfeeding and often when there is a clogged duct present. The inflammation of the breast when it is clogged will build an accumulation of milk and the damaged tissue will provide an ideal breeding ground for bacteria such as Staphylococcus, Streptococcus or E. Coli that may enter the breast through fissures, to cause an infection that requires antibiotic treatment to resolve. Some factors that could cause mastitis are the same factors as clogged ducts as well as tongue tie, a child with weak suckle, and suddenly halting breastfeeding for a time or permanently. A mother being unrested or having a history of mastitis could influence the development of mastitis as well. Mastitis can present with the same symptoms as a clogged milk duct and additionally can present with feeling tired, sick, fevers, and chills. Prevention and treatment of mastitis is like that of a clogged duct with the addition of antibiotics if the mastitis is diagnosed as bacterial through testing of breast milk or if the mother has severe symptoms (Giugliani, 2004).

 Lactation and the breastfeeding experience are a fascinating process both physiologically and mechanically. The process of lactation and the positive feedback loop involved in production of breast milk provides a rich food source for newborn babies and benefits for mothers. Good breastfeeding techniques and knowing the signs of breastfeeding problems can help a new mother in her breastfeeding journey to success.

**References**

Betts, J.G., Desaix, P., Johnson, E., Korol, O., Kruse, D., Pow, B., Wise, J.A., Womble, M.,

Young, K., (2022), *Anatomy and Physiology 2e.* OpenStax.

<https://openstax.org/details/books/anatomy-and-physiology-2e>

Giugliani, ERJ (2004). Problemas comuns na lactação e seu manejo Common problems during

lactation and their management. *Jornal de Pediatria*, *80*(5), s147–s154.

<https://doi.org/10.1590/S0021-75572004000700006>

Kent, J. C. (2007). How breastfeeding works. *Journal of midwifery & women's health*, *52*(6), 564-570. [https://doi.org/10.1016/**j**.jmwh.2007.04.007](https://doi.org/10.1016/j.jmwh.2007.04.007)

Wagner, B. (2022), Breastfeeding tips from a lactation consultant. *Health Focus: University*

*Health*, <https://www.universityhealth.com/blog/breastfeeding-tips>