

Initiating milk production

Reaching an adequate milk production begins with developing the breast tissue (Develop) and initiating milk synthesis (Initiate). Getting things right from the start will have a substantial impact on long-term milk production success.

The following information is relevant for mothers in the first days after birth, before milk has 'come in'.

Develop

This stage is known as secretory differentiation (lactogenesis I). Pregnancy is not only about growth of the infant, but is also a time for the breast to prepare for lactation.



Up to 46% breast growth

Breasts can increase up to 46% in size from pre-pregnancy to birth. Not all mothers experience such an increase and for some it may occur after the infant is born.¹



Mammary structural change

An intricate system of branching milk ducts and milk-producing cells (lactocytes) are formed within the mammary gland throughout pregnancy. During this time, small volumes of early milk (colostrum) may be produced.^{2,3}

Initiate

This stage is known as secretory activation (lactogenesis II), commonly referred to as milk 'coming in'. In the first few days after birth, changes in key hormones, as well as breast stimulation, activate the lactocytes to initiate copious milk production.



Day 1: 10–50 ml

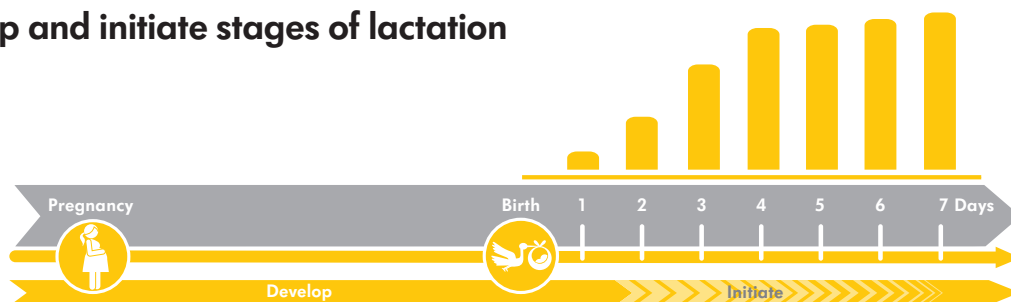
Mothers produce between 10–50 ml in the first 24 hours after birth. These volumes increase in the coming days, coinciding with colostrum changing to transitional milk.³⁻⁵



Day 3: milk 'comes in'

The timing of secretory activation is different for each mother, ranging from 24–120 h after birth. Delayed secretory activation has been associated with a shortened lactation.^{3,6,7}

The develop and initiate stages of lactation



Starting things right

Directly after birth, mothers have high levels of oxytocin – a principal lactation hormone. Early and frequent breastfeeding or expressing takes advantage of these high oxytocin levels and helps facilitate long-term milk production in mothers of both term and preterm infants.



To support exclusive breastfeeding of the healthy term infant:

Breastfeeding in the first hour

Placing the infant skin-to-skin early is best practice to encourage the first breastfeed.^{8,9} This promotes a longer breastfeeding relationship.

Frequent breastfeeding

Feeding every two to three hours is recommended. Continued skin-to-skin encourages mothers to recognise her infant's early feeding cues.^{9,10}

Anticipate 3x soiled nappies

Three or more yellow stools over 24 hours from ~day 4 are an indicator that secretory activation has occurred and milk production is on track.¹⁰



To support an exclusive human milk diet when breastfeeding is not possible:

Pumping in the first hours

Stimulating the breasts with research-based initiation technology in the first 1-6 hours is important.¹¹⁻¹⁵ This supports timely initiation and long-term milk production.

Frequent pumping

Pumping multiple times a day with initiation technology helps to achieve adequate volumes. Double pumping¹⁶ every two to three hours is beneficial for this.¹⁷

Anticipate 1x 20 ml

Pumping ≥ 20 mL from both breasts combined, during one pumping session, indicates that milk production is on track and it is time to use a pumping program designed to extract milk.¹¹



A helping
hand

Mothers should be taught the valuable skill of hand expressing. When breastfeeding is not possible, a combination of hand expression and pumping may be used.¹⁸ Hand expression may help remove milk in the first few days after birth, while pumping with research-based initiation technology helps to achieve adequate long-term milk volumes.¹¹ The use of early hand expression alone has been shown to yield significantly less cumulative daily milk production.^{19,20}

References: 1 Cox DB et al. *Exp Physiol.* 1999;84(2):421-434. 2 Hassiotou F et al. *Clin Anat.* 2013;26(1):29-48. 3 Kulski JK et al. *Aust J Exp Biol Med Sci.* 1981;59(1):101-114. 4 Neville MC et al. *Pediatr Clin North Am.* 2001;48(1):35-52. 5 Neville MC et al. *Am J Clin Nutr.* 1988;48(6):1375-1386. 6 Nommensen-Rivers LA et al. *Am J Clin Nutr.* 2010;92(3):574-584. 7 Brownell et al. *J Pediatr.* 2012; 161(4):608-614. 8 Christensson K et al. *Acta Paediatr.* 1992;81(6-7):488-493. 9 Salariya EM et al. *Lancet.* 1978;2(8100):1141-1143. 10 Lawrence RA et al. *Elsevier Mosby.* 2011. 11 Meier PP et al. *J Perinatol.* 2012;32(2):103-110. 12 Torowicz DL et al. *Breastfeed Med.* 2015;10(1):31-37. 13 Post ED et al. *J Perinatol.* 2016;36(1):47-51. 14 Parker LA et al. *J Perinatol.* 2020; 40(8):1236-1245. 15 Yuan S et al. *Breastfeed Med.* 2023;18(7):506-513. 16 Prime DK et al. *Breastfeed Med.* 2012;7(6):442-447. 17 Hill PD et al. *J Hum Lact.* 2001;17(1):9-13. 18 Morton J et al. *J Perinatol.* 2009;29(11):757-764. 19 Lussier MM et al. *Breastfeed Med.* 2015;10(6):312-317. 20 SlusherT et al. *J Trop Pediatr.* 2007;53(2):125-130.