

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.

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

This is especially true with premature deliveries where the breasts have had a shorter time to develop.



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". Upon delivery, the lactation hormone "prolactin" plays key roles, including the upregulation of genes that promote the further and rapid development of breast tissue - especially important for preemie moms - and the activation of milk production. In addition, prolactin prevents cellular death of lactocytes.^{4,16-20}

Premature delivery (as well as other lactation risk factors) may affect milk production if early, frequent and effective stimulation is not provided to the breasts. High frequency of breastfeeding or electric pumping when breastfeeding is not possible (ex. preemie baby) is critical to maintain high levels of prolactin. Prolactin release is suckling-induced, and its concentrations are directly related to the intensity of the suckling (vacuum) stimulus.^{4,16,21}

Therefore, the continuing presence of high levels of prolactin is necessary at this stage for optimal programming of the breasts and initiation of milk production.^{4,16,18-22}



Day 1: 10–50 ml

These volumes increase in the coming days, coinciding with colostrum changing to transitional milk.



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}

Starting things right

Directly after birth, mothers have high levels of oxytocin - a principal lactation hormone together with prolactin. Early and frequent breastfeeding or expressing takes advantage of these high oxytocin levels to express colostrum and contributes to facilitating long-term milk production in mothers of both term and preterm infants.^{1,23-25}



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.^{7,8} This promotes a longer breastfeeding relationship.

Frequent breastfeeding

Feeding every two to three hours is recommended. Continued skin-to-skin encourages mothers to recognize their infants' early feeding cues.^{8,9}

Anticipate 3x soiled diapers

Three or more yellow stools over 24 hours from ~ day 4 are an indicator that initiation has occurred and milk production is on track.⁹



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

Pumping in the first hour

Stimulating the breasts with research-based initiation technology in the first hour is important.¹⁰⁻¹³ 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 pumping¹⁴ every two to three hours is beneficial for this.¹⁵

Anticipate 3x 20 ml

Pumping \geq 20 ml in each of three consecutive sessions indicates that initiation has occurred. It is then time to use a pumping program designed to extract milk.¹⁰



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.¹⁶ 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.^{10-12,25} The use of early hand expression alone has been shown to yield significantly less cumulative daily milk production.^{17,18}

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