Journal of Midwifery & Women's Health www.jmwh.org
Original Review

Physiologic Breastfeeding: A Contemporary Approach to Breastfeeding Initiation

CEU

Robyn Schafer, CNM, MSN, RN, EdM, IBCLC, Catherine Watson Genna, BS, IBCLC

Early initiation of breastfeeding has numerous benefits for maternal-child health. Maternity care providers have been shown to play a significant role in establishing breastfeeding, yet there is limited research about clinical approaches that support breastfeeding initiation in the immediate postpartum. Traditional methods that focused on position and attachment have not demonstrated consistent, positive effects on breastfeeding outcomes. Contemporary approaches to breastfeeding initiation emphasize innate maternal and neonatal breastfeeding abilities and the importance of breastfeeding self-efficacy, dyad-centered care, and a supportive breastfeeding environment free from unnecessary interventions. Recommendations for clinical practice for physiologic breastfeeding initiation are provided.
J Midwifery Womens Health 2015;60:546–553

Keywords: breastfeeding, fourth stage, lactation, physiologic birth, postpartum care, skin-to-skin

INTRODUCTION

Breastfeeding is widely recognized as the optimal feeding method for newborns, and provider support for breastfeeding is strongly advocated by most major health organizations. Early initiation of breastfeeding facilitates breastfeeding success and has been shown to increase maternal-infant attachment, reduce maternal morbidity, and decrease neonatal morbidity and mortality.[1–6]

Maternity care providers play a vital role in successful initiation of breastfeeding, yet there is a paucity of research about the effectiveness of various clinical approaches to supporting breastfeeding in the immediate postpartum period.[7–9] This article presents a historic overview of methods of breastfeeding initiation support and reviews current research into contemporary approaches. We explore the conceptual framework of physiologic birth as it relates to breastfeeding initiation and provide recommendations for clinical practice based on these findings.

HISTORICAL FOCUS ON POSITION AND ATTACHMENT

Traditional provider practices for supporting breastfeeding initiation developed in the era of twilight sleep in response to women and neonates who both needed significant assistance to overcome the effects of heavy sedation.[10] With compromised biologic responses, breastfeeding dyads in the immediate postpartum period were viewed as lacking breastfeeding instincts and incapable of initiating breastfeeding without intervention.[11] Therefore, providers developed hands-on techniques to manipulate the newborn's body and the woman's breast to manually position and attach the newborn onto the nipple. This breast-centered approach to breastfeeding support formed strong roots among maternity care providers, who assumed the role of breastfeeding experts entrusted to teach women and newborns how to breastfeed.[12]

Address correspondence to Robyn Schafer, CNM, MSN, RN, EdM, IBCLC, Hudson Center for Women's Health, 258 High Avenue, Nyack, NY 10960. E-mail: robynscnm@gmail.com

REDISCOVERY OF INNATE BREASTFEEDING ABILITIES

After the natural childbirth movement of the 1960s to 1980s, rates of breastfeeding increased, and research demonstrating innate newborn breastfeeding abilities emerged.[10] A seminal 1987 study by Widström et al observed 21 healthy term newborns (10 in the control group, 11 the intervention group) placed on their mother's chest in the immediate postpartum period either immediately following birth or after undergoing gastric suctioning. The researchers found that, in the control group, newborns exhibited an organized, spontaneous behavioral sequence to seek and move toward the woman's nipple and initiate breastfeeding, a sequence that was noticeably disrupted in the intervention group.[13]

Further studies concluded that like other mammalian neonate, a healthy human neonate, following a brief period of recovery from birth, demonstrates a predictable pattern of behaviors known as the mammalian feeding sequence or the *breast crawl* (Table 1).[14–19] More recently, Widström et al videotaped 28 newborns placed skin-to-skin on their mother's chest immediately following birth in a Swedish hospital and used these data to outline the 9 distinct behavioral phases that occur in the transition from birth to breastfeeding: birth cry, relaxation, awakening, activity, crawling, resting, familiarization, suckling, and sleeping.[17]

Throughout this sequence, numerous neonatal reflexes, which are instinctive, physiologic responses to endogenous or environmental stimuli, contribute to the newborn's ability to self-attach to the breast. These reflexes include rooting, sucking, swallowing, stepping, crawling, hand-to-mouth, mouth gape, head bobbing, arm and leg cycling, and many others that aid in the newborn's ability to locate the nipple and transfer milk.[16]

Newborn Self-Attachment to the Breast

As some breastfeeding support providers became aware of newborns' innate breastfeeding abilities, they shifted away from manual position and attachment toward allowing the

 1526-9523/09/$36.00 doi:10.1111/jmwh.12319

Quick Points

- Healthy term newborns have innate reflexes and abilities to find the nipple, latch onto the breast, and initiate breastfeeding.
- Methods of breastfeeding support affect breastfeeding initiation, maternal-infant bonding and attachment, and breastfeeding self-efficacy.
- The physiologic process of breastfeeding initiation should be supported by providers and undisturbed by unnecessary interventions and directions.
- Following a birth, in the absence of risk factors, healthy newborns should remain on their mothers in uninterrupted direct skin-to-skin contact until breastfeeding is established.
- Providers should strive to remove artificial time constraints on breastfeeding initiation and create a supportive breastfeeding environment.
- When needed, providers should offer encouragement and minimal support to facilitate the breastfeeding dyad in following their breastfeeding instincts.

newborn to find the breast spontaneously. In this self-attachment approach to breastfeeding initiation support, newborns are free to follow their innate breastfeeding instincts, while their mothers provide the physical environment and opportunity for breastfeeding, and providers facilitate the process by ensuring safety and comfort.[15,20]

Studies examining the newborn self-attachment approach report high levels of maternal satisfaction,[21] with positive effects on onset of lactation, pain associated with breastfeeding, and neonatal weight loss in the first 3 days of life.[19] Girish et al randomized mother-newborn pairs (N = 100) to self-attachment versus routine hospital care.[19] They found that all newborns in the self-attachment group attempted the breast crawl, with the average time to initiation being 20 minutes and average time to completion being 40 minutes. The mean weight loss in the intervention group was significantly less than in the control group ($P = .03$), as were maternal reports of pain during breastfeeding (24% vs 44%, $P = .03$) and experiences of delayed onset of lactation (12 vs 30, $P = .0005$).[19] Completion of the breast crawl has been shown to help establish early, effective breastfeeding, thereby increasing the likelihood of adequate milk production, which correlates with greater overall breastfeeding success.[15,19]

MATERNAL CONFIDENCE AND BREASTFEEDING SELF-EFFICACY

As the benefits of exclusive breastfeeding for the first 6 months of life became well established, international research sought to identify factors that contribute to breastfeeding duration and exclusivity. Among others, maternal confidence and breastfeeding self-efficacy have emerged as critical determinants.[22–25] For example, in a prospective survey of 300 Australian women, Blyth et al discovered a significant correlation between higher measures of antepartum and postpartum breastfeeding self-efficacy and rates of breastfeeding exclusivity at one week and 4 months postpartum ($P < .001$).[23]

Through this lens, international qualitative research in the last decade has sought to explore the traditional, hands-on method of breastfeeding support focused on manual position and attachment and its effect on breastfeeding self-efficacy. Several studies report that hands-on breastfeeding support is correlated with maternal dissatisfaction, feelings of objectification, reduced maternal confidence, and low breastfeeding self-efficacy.[26–28] For instance, Cato et al surveyed 879 women 6 months after giving birth in a Swedish hospital and found that the 38% of women who received hands-on management of the first breastfeeding session were significantly more likely to view their first breastfeeding experience negatively (70% vs 30%; odds ratio, 4.48; 95% confidence interval (CI), 2.57-7.82).[28]

Hands-Off Approach

These findings led to the development of hands-off methods, which focus on conveying proper newborn position and attachment using verbal instruction or demonstration with dolls and models rather than physical manipulation of the newborn or breast. Numerous qualitative studies have found that the majority of women find hands-off methods less objectifying and disempowering than the hands-on approach, leading to increased rates of maternal confidence,[8,26–29] although it is as yet unclear what difference this effect has on breastfeeding duration.[30,31]

Table 1. Breast Crawl Sequence

Skin-to-skin contact with maternal abdomen/chest
Visualization of the mother and breast
Localization of the nipple by smell
Rooting
Hand-to-mouth movements
Stepping and crawling toward the nipple
Head bobbing and turning
Touching, licking, and massaging the nipple
Wide-open latch
Sucking and milk transfer

The hands-off approach has received some criticism from those women desiring more practical assistance, as well as from providers who view the hands-on method as easier, more time-efficient, and more effective than teaching a woman how to position and latch her newborn herself.[12,27,32] One randomized controlled trial (RCT) designed to evaluate the effects of a hands-off, postpartum breastfeeding educational intervention among 160 first-time Australian mothers even found that an "unintended consequence of the emphasis on instruction and assessment of position and attachment may have been to raise anxiety in first-time mothers … contribut[ing] to a feeling that breastfeeding was too difficult" and corresponding decreases in maternal satisfaction and overall rates of breastfeeding.[33]

Thus, although the hands-off approach initially offered some promise over hands-on methods, several large-scale RCTs have concluded that no single breastfeeding support intervention focused on position and attachment, whether hands-on or hands-off, has been shown to significantly increase rates of maternal breastfeeding self-efficacy, breastfeeding duration, or exclusivity.[30,31,33–36] As a result, contemporary theories of breastfeeding initiation have shifted away from mechanical position and attachment models toward a focus on supporting a relationship-centered breastfeeding experience incorporating innate breastfeeding abilities.

Figure 1. Biological nurturing or "laid-back" breastfeeding position

BREASTFEEDING MUTUALITY

Whereas position and attachment theories of breastfeeding support view breastfeeding as an essentially acquired skill, and self-attachment theory proposes it is an intrinsically innate one, contemporary approaches regard breastfeeding initiation as a combination of both nature and nurture, a learned behavior supported by biological instincts. These modern theories of breastfeeding support emphasize the inherent mutuality of breastfeeding, with active participation by both mother and newborn, and the fundamental importance of dyad-centered care. Two models of breastfeeding initiation based on the concept of breastfeeding mutuality and the mother-infant partnership are biological nurturing and baby-led, mother-guided breastfeeding.

Biological Nurturing

Biological nurturing (BN) is a neurobiologic approach to breastfeeding developed by Suzanne Colson, a UK midwife and nurse, based on the idea that certain breastfeeding behaviors and positions are more likely to enhance neonatal reflexes and maternal instincts to establish successful breastfeeding.[16] In stark contrast to the traditional breastfeeding advice that women sit upright and support their infant's back and head, BN acknowledges that infants can breastfeed in any position but recognizes that semireclining maternal postures with a prone infant are often most beneficial (Figure 1).[37] Colson proposes that this laid-back position takes full advantage of neonatal reflexes and gravity while freeing the woman's hands to respond to her newborn, allowing for increased physical contact, comfort, and support.[16,37] Colson's research suggests that this position facilitates eye contact and interaction for greater maternal-infant bonding and notes that many women naturally assume a laid-back posture if traditional breastfeeding advice is avoided.[37,38]

Colson's findings are based on her 2008 mixed-methodological study that reviewed videotaped breastfeeding sessions (N = 93) within the first postpartum month of 40 recruited healthy term mother-newborn dyads in the United Kingdom.[16] The researchers identified 20 primitive neonatal reflexes (PNRs) associated with breastfeeding behaviors and analyzed how these reflexes were influenced by maternal posture and neonatal positioning. Maternal positions were categorized as full BN (semi-reclined, 15-64°), partial BN (supine or side-lying, 0-14°), or non-BN (upright, ≥ 65°). Neonatal positions were qualified based on the degree to which the newborn's body was facing, touching, and in close proximity to the maternal body contour, with full BN exhibiting all 3 characteristics, partial BN demonstrating a gap between the newborn and mother, and non-BN having limited contact, focused solely on the maternal breast and the newborn's mouth.

Colson et al found that significantly more PNRs were observed in full BN postures than in partial or non-BN postures (15.9 vs 11.6, $P < .0005$). The researchers determined that in non-BN positions, newborns were more likely to be pulled away from the maternal chest by gravity and exhibit greater difficulty latching, with episodes of erratic back-arching and arm- and leg-cycling; whereas in full-BN postures, gravity pulled the newborn toward the mother, bringing the newborn's tongue and chin forward naturally and eliciting the wide-open mouth necessary for comfortable and effective latch, thus eliminating the need to mechanically position or attach the newborn to the nipple.[16] Therefore, Colson et al conclude that human newborns are innately abdominal (rather than dorsal) feeders who have instinctive antigravity reflexes that aid in breastfeeding latch.

Based on these findings, Colson challenges the efficacy of traditional position and attachment approaches to breastfeeding initiation. She argues that these mechanical, skills-teaching approaches rely on maternal positions, which hinder innate reflexes and require focused attention on the part of the learner to prioritize thinking over instinct, thus inhibiting oxytocin release and detracting from maternal-infant bonding.[16,37]

Colson also questions the safety and efficacy of the self-attachment approach,[38] in which the woman is characteristically positioned supine and takes a mostly passive role, allowing the newborn to attach to the breast independently. Although further research is needed, Colson proposes that nonsupine breastfeeding positions reduce the risk of idiopathic sudden unexpected postnatal collapse and that BN facilitates eye contact and increases spontaneous maternal supportive responses to create an "intimate, reciprocal, sensorial conversation" that supports newborn breastfeeding behaviors, enhances bonding, reduces latch time, and minimizes neonatal stress from prolonged breast-seeking efforts.[38]

Instead of these approaches, Colson advises that breastfeeding support providers should avoid preemptively teaching correct position and attachment because such efforts may interfere with physiologic maternal and neonatal response mechanisms. Rather, clinicians should promote an oxytocin-friendly environment, which enhances innate breastfeeding instincts and supports women and newborns in establishing comfortable, confident breastfeeding.[16,37]

Baby-Led, Mother-Guided Breastfeeding

The breastfeeding partnership is the foundation of the baby-led, mother-guided approach developed by Christina Smillie, pediatrician and international board certified lactation consultant, which views the breastfeeding dyad as "a single psychoneurobiological organism" mutually reinforcing each others' natural breastfeeding instincts.[39] Smillie's approach is based primarily on direct observations from patient interactions within her Connecticut-based breastfeeding medicine practice, where she works closely with mother-infant dyads to establish and support breastfeeding.

At the heart of Smillie's approach is the concept that maternal, oxytocin-mediated instincts support neonatal reflexes.[40] Smillie has found that even inexperienced mothers often spontaneously respond to their newborns by gently supporting their breast-seeking instincts and providing physical support, sensory cues, and emotional feedback.[39]

In the baby-led, mother-guided approach to breastfeeding initiation, the newborn is primarily responsible for breastfeeding behaviors; the mother's role is to offer reassurance by listening and responding to her newborn's efforts and providing a calm, relaxing, and supportive environment.[40] According to this approach, there is no one right way to breastfeed.[39] Therefore, providers should strive for dyad-centered care, focusing on the interaction of mother and newborn. Taking on the role of interpreters, providers should aim to help women understand their newborns' feeding cues and support their feeding-directed behaviors. In this way, providers can strengthen women's confidence in their own and their newborns' innate breastfeeding abilities.[39]

PHYSIOLOGIC BREASTFEEDING: A CONCEPTUAL FRAMEWORK

Physiologic birth is defined as "one that is powered by the innate human capacity of the woman and fetus," (p. 5) with the understanding that birth is more likely to be safe and healthy without unnecessary interventions that disrupt normal physiologic progression.[41] Following the World Health Organization's (WHO's) call to eliminate unnecessary interventions in childbirth and the consensus statement in support of physiologic birth by the American College of Nurse-Midwives, Midwives Alliance of North America, and National Association of Certified Professional Midwives, there has been a widespread effort to renormalize normal birth, including limited intervention in the immediate postpartum period—the fourth stage of labor and birth in which the neonate transitions to extrauterine life and initiates breastfeeding.[41,42] Advocates of physiologic birth stress the need to eliminate factors that disrupt normal labor such as induction or augmentation, imposition of time constraints, unsupportive environments, unnecessary physical interventions, and inappropriate use of technology.[41]

Physiologic breastfeeding is similarly powered by the innate human capacity of mother and newborn, and breastfeeding initiation should also be protected from unnecessary interventions. These same disruptive influences in labor are equally applicable in the fourth stage. Physiologic breastfeeding leads to the release of oxytocin, prolactin, and related gastrointestinal hormones, which are associated with numerous health benefits, including improved neonatal thermoregulation and more stable blood glucose levels,[21,43] enhanced maternal-infant bonding,[15,44] stronger breastfeeding performance,[18,19] and greater maternal breastfeeding self-efficacy.[25] Oxytocin production from physiologic nipple stimulation may also contribute to uterine contractions which aid in placental expulsion and decrease risk of postpartum hemorrhage.[44–46]

Physiologic breastfeeding support is based on a fundamental trust in women's bodies and innate newborn breastfeeding abilities. In the model of physiologic breastfeeding initiation, the role of the clinician is to allow the woman and her newborn to follow their natural instincts to establish breastfeeding and to maintain an environment in which they both feel calm, comfortable, and supported. As in other areas of care, providers should prioritize listening to identify the needs of the woman and her newborn. They should refrain from offering directives, acknowledging that breastfeeding does not need to be managed, and instead encourage the woman to follow her instincts and respond to her newborn's cues so they can find their own way to breastfeed. Care should be holistic and dyad-centered, recognizing the importance of the emotional and psychological well-being of mother and newborn, as well as any relevant social or cultural considerations for a truly individualized breastfeeding experience.

IMPLICATIONS FOR CLINICAL PRACTICE

Using the conceptual framework of physiologic breastfeeding and modern theories of breastfeeding support, providers can apply nonintervention to breastfeeding initiation by using

dyad-centered care designed to support innate breastfeeding instincts and strengthen maternal self-efficacy, while assessing for situations that may require additional support. The following practices are clinical recommendations for physiologic breastfeeding initiation as standard care for low-risk breastfeeding dyads.

Immediate and Undisturbed Skin-to-Skin Contact

The benefits of immediate skin-to-skin care (SSC) are well established. Placing newborns skin-to-skin on the maternal chest or abdomen supports recovery from birth and facilitates breastfeeding initiation. Studies have shown that by stabilizing neonatal thermoregulation[43] and blood glucose levels,[18] reducing stress responses,[47] promoting bonding,[1] and eliciting oxytocin release,[44] immediate and direct skin-to-skin contact sets the stage for breastfeeding success.

The most recent Cochrane review examining the effects of SSC in 34 RCTs involving 2177 mother-newborn dyads found that SSC positively affected breastfeeding at 1 to 4 months postpartum (13 trials, 702 participants; relative risk (RR), 1.27; 95% CI, 1.06-1.53), breastfeeding duration (7 trials, 324 participants; mean difference (MD), 42.55 days; 95% CI, 1.69-86.79; $P = .06$), breastfeeding success at the first feeding session (2 trials, 54 participants, MD Infant Breastfeeding Assessment Tool [IBFAT] validated scores, 1.79; 95% CI, 0.24-3.35) and neonatal blood glucose levels at 75 to 90 minutes postpartum (2 trials, 94 participants, MD 10.56 mg/dL; 95% CI, 8.40-12.72).[18]

More recent trials have added to the known benefits of SSC including a 2014 trials in India (N = 240), which found that newborns who receive immediate SSC have lower short-term weight loss, higher rates of breastfeeding initiation, and greater breastfeeding exclusivity.[48] An Iranian 2014 RCT (N = 92) found that immediate and continuous SSC positively affected maternal breastfeeding self-efficacy using a validated scale (mean [standard deviation], 53.42 [8.57] vs 49.85 [5.50], $P = .0003$) as well as the success of the first breastfeed (56.6% vs 35.6%, $P = .02$) and reduced mean (SD) time to breastfeeding initiation (21.98 [9.10] min vs 66.55 [20.76] min, $P < .0001$) compared to routine care.[25]

Conversely, Righard and Alade's seminal 1990 observational study (N = 72) demonstrated that even a "brief separation of the infant from the mother during the first hour after birth had a strong [negative] effect on the success of the first breast-feed" by disrupting innate breastfeeding behaviors.[14]

Therefore, in line with the American Academy of Pediatrics' clinical practice guidelines, healthy term newborns should not be separated from their mothers even for a brief period and should remain in skin-to-skin contact in the absence of interventions until the conclusion of the initial breastfeeding session.[49] This first feed may consist of multiple latches and repositioning attempts, concluding once suckling has been achieved and the newborn shows signs of satiety or deep sleep.

No Artificial Time Constraints

The WHO/UNICEF Baby-Friendly Hospital Initiative's Ten Steps to Successful Breastfeeding requires that providers "[h]elp mothers initiate breastfeeding within a half-hour of birth,"[50] although this period has been extended to one hour postpartum in the US initiative.[51] Indeed, several observational studies have found that although most newborns initiate breastfeeding within 60 minutes, some take up to 75 minutes.[15,17,19,21,44] After surveying 318 women in Japan and finding the full benefit of early breastfeeding initiation within 2 hours postbirth, Nakao et al recommended extending this time frame to 120 minutes.[52] After 2 hours postbirth, however, newborns often become sleepy and difficult to rouse, making breastfeeding initiation more challenging.[18]

Therefore, as long as normal breast-seeking behaviors are observed and breastfeeding is initiated within 1 to 2 hours following the birth, providers can support physiologic breastfeeding initiation by practicing watchful waiting and nonintervention in the absence of specific risk factors.

Autonomous Newborn Hand Use

Newborns' hands play an integral part in breast-seeking and breastfeeding behavior. Research is beginning to emerge that hand-to-breast and hand-to-mouth movements may serve several important purposes by making the nipple erect, stimulating oxytocin release, providing opportunity for self-soothing, shaping and moving the breast, and assisting with nipple location and attachment.[17,39,44,53]

Matthiesen et al established the important relationship between newborn hand use and maternal oxytocin levels based on videotapes of first breastfeeding sessions (N = 10) and correlating sequential maternal blood samples. They found that healthy neonates following an uncomplicated vaginal birth placed skin-to-skin on the maternal chest exhibited coordinated, spontaneous, prefeeding hand movements to massage the breast. This clearly correlated with a rise in maternal oxytocin levels, which the authors propose may positively affect bonding, milk ejection reflex, and postpartum uterine contractions.[44]

Autonomous newborn hand use plays an important role in physiologic breastfeeding initiation; therefore, providers should avoid swaddling, redirecting, or restraining newborns' hands during breastfeeding. Providers can also help women identify newborn hand use as normal breast-seeking behavior and a sign of readiness for breastfeeding initiation.

Supportive Breastfeeding Environment

The immediate postpartum period is considered as a "psychophysiologically 'sensitive period' for programming future physiology and behavior,"[18] and thus it is essential that providers maintain an environment conducive to breastfeeding and bonding during this time. Advocates of contemporary approaches to breastfeeding propose that women are in a unique cognitive state that facilitates intuitive, emotional-based thinking during the initial postpartum period.[16,37,39,54] This concept is supported by a qualitative study (N = 100), which found significant transient deficits in cognitive functioning (specifically in recall and memory) on the first postpartum day following a vaginal birth of a healthy term newborn using standardized neuropsychologic testing.[55] Thus, when providers offer detailed verbal instructions or

information about breastfeeding mechanics to newly postpartum women, they may stimulate brain function in a way that inhibits physiologic breastfeeding and maternal-infant attachment.[37,39,54]

Providers should offer assistance only when necessary, as breastfeeding advice and/or other interventions in the absence of a medical indication have the potential to undermine breastfeeding success. When direction is necessary to support breastfeeding initiation, providers should try to convey information in a calm, relaxed, and illustrative (ie, nontechnical) way that does not disrupt the maternal cognitive state postpartum and maintains a supportive, relationship-centered breastfeeding environment.

Provider Support

Providers play an active and crucial role in supporting physiologic breastfeeding. Essentially, this entails following the WHO/UNICEF's recommendation to "Place babies in skin-to-skin contact with their mothers immediately following birth for at least an hour and encourage mothers to recognize when their babies are ready to breastfeed, offering help *if needed* [emphasis added]."[50]

Immediately after the birth, providers should facilitate skin-to-skin contact and support the woman in following her natural instincts to respond to her newborn during a brief phase of recovery and taking-in. When the newborn displays signs of readiness to begin feeding (eg, squirming, mouthing and sucking movements, hand-to-mouth motions), the provider can help the woman identify these behaviors and assist her in assuming a comfortable position with her newborn well supported. If she does not do so spontaneously, the woman can be encouraged to calm and encourage her newborn through her voice and touch. Providers should offer reassuring communication, interpreting newborn behavior as normal and positive, praising how the woman responds to her newborn's physical cues, and reinforcing how the newborn reacts to the mother's efforts.[12,39,54] Through the use of verbal and nonverbal communication that conveys self-efficacy in the dyad's ability to breastfeed independently, providers can facilitate maternal-newborn interaction and strengthen maternal confidence to build a successful breastfeeding relationship.

RISK FACTORS FOR COMPLICATIONS

Physiologic breastfeeding initiation should be the norm for healthy term dyads; however, this approach may not be appropriate when risk factors for breastfeeding complications are present. Physiologic breastfeeding initiation is not advised if any general contraindications to breastfeeding exist. These include maternal infection with HIV (in the industrialized world), untreated active tuberculosis, human T-cell lymphotropic virus type I or II, untreated brucellosis, or recent varicella (within the past 5 days); active herpes lesions on the breast; classical neonatal galactosemia; and maternal use of antimetabolite chemotherapy agents, concurrent radiation therapy, or illicit drugs.[49]

It is important to assess all dyads for indications that may require additional intervention or support (Table 2) and be prepared to engage lactation specialists or other health care providers to develop an antepartum plan of care or offer additional postpartum assistance should physiologic breastfeeding initiation be unsuccessful.[56]

Table 2. Risk Factors for Complications with Physiologic Breastfeeding

Neonatal
Anatomic abnormalities (eg, ankyloglossia, cleft palate, craniofacial asymmetries)
Muscular imbalances (eg, torticollis, hypotonia)
Low neurobehavioral functioning
Trauma from operative birth, resuscitation, or suctioning
Hyperbilirubinemia
Prematurity
Intrauterine drug exposure
Maternal separation
Maternal
Breast/nipple pathology or anomaly (eg, flat or inverted nipples, mammary hypoplasia)
History of breast surgery
Birth of 2 or more neonates
Adverse sequelae from intrapartum interventions or complications (eg, breast edema from extensive intravenous fluids, exhaustion from prolonged labor)
Anxiety, related to breastfeeding, previous negative breastfeeding experience

Source: Adapted from Holmes et al.[56]

Women from populations with low rates of breastfeeding in general (eg, adolescents, women with multiple newborns) may require extra assistance to overcome barriers and establish successful breastfeeding. Those women experiencing complications from intrapartum interventions such as breast edema from extensive intravenous fluids, pain from episiotomy/suturing, or effects of analgesia may also encounter challenges with breastfeeding initiation. It is worth noting that there is no clear evidence of consistent effects of intrapartum analgesia on newborn breast-seeking and breastfeeding behaviors because these behaviors are influenced by multiple confounding variables.[57–60] In addition to known risk factors, any dyads who are unable to achieve successful attachment to the breast within 1 to 2 hours following the birth should be referred to a lactation specialist.

CONCLUSION

Historic philosophies of breastfeeding incompetence and routine provider interventions create significant barriers to breastfeeding initiation. Traditional position-and-attachment focused approaches to breastfeeding support have not shown consistent benefits. Evidence demonstrating the presence of innate neonatal breastfeeding instincts and the importance of maternal breastfeeding self-efficacy warrants additional research into physiologic breastfeeding initiation and associated maternal-child health outcomes.

Contemporary approaches to breastfeeding advocate physiologic breastfeeding initiation, with providers offering noninterventive, dyad-centered breastfeeding support. By acknowledging mothers' and newborns' abilities to breastfeed independently, encouraging instinctive breastfeeding and bonding behaviors, using effective communication techniques to increase breastfeeding self-efficacy, and maintaining a supportive breastfeeding environment, maternity care providers can facilitate breastfeeding success.

AUTHORS

Robyn Schafer, CNM, MSN, RN, EdM, IBCLC, is in a full-scope midwifery practice in Nyack, New York.

Catherine Watson Genna, BS, IBCLC, is a lactation consultant in private practice in New York City.

CONFLICT OF INTEREST

The authors have no conflicts of interest to disclose.

REFERENCES

1. Widstrom AM, Wahlberg V, Matthiesen AS, et al. Short-term effects of early suckling and touch of the nipple on maternal behaviour. *Early Hum Dev*. 1990;21(3):153-163.
2. Klaus M. Mother and infant: Early emotional ties. *Pediatrics*. 1998;102(5 suppl E):1244-1246.
3. Campbell OM, Graham WJ. Strategies for reducing maternal mortality: Getting on with what works. *The Lancet*. 2006;368(9543):1284-1299.
4. Edmond KM, Zandoh C, Quigley MA, Amenga-Etego S, Owusu-Agyei S, Kirkwood BR. Delayed breastfeeding initiation increases risk of neonatal mortality. *Pediatrics*. 2006;117(3):e380-e386.
5. Bystrova K, Ivanova V, Edhborg M, et al. Early contact versus separation: Effects on mother-infant interaction one year later. *Birth*. 2009;36(2):97-109.
6. Debes AK, Kohli A, Walker N, Edmond K, Mullany LC. Time to initiation of breastfeeding and neonatal mortality and morbidity: A systematic review. *BMC Public Health*. 2013;13 (suppl 3):S19-2458-13-S3-S19. Epub 2013 Sep 17.
7. Cooke M, Cantrill RM, Creedy DK. Midwives' reported practice supporting the first breastfeed. *Matern Child Nutr*. 2009;5(4):334-346.
8. Backstrom CA, Wahn EI, Ekstrom AC. Two sides of breastfeeding support: Experiences of women and midwives. *Int Breastfeed J*. 2010;5:20. doi: 10.1186/1746-4358-5-20.
9. Renfrew MJ, McCormick FM, Wade A, Quinn B, Dowswell T. Support for healthy breastfeeding mothers with healthy term babies. *Cochrane Database Syst Rev*. 2012;5:CD001141.
10. Smith L, Kroeger M. *Impact of Birthing Practices on Breastfeeding*. 2nd ed. Sudbury, MA: Jones & Bartlett Learning; 2010.
11. Gunther M. Instinct and the nursing couple. *Lancet*. 1955;268(6864):575-578.
12. Burns E, Fenwick J, Sheehan A, Schmied V. Mining for liquid gold: Midwifery language and practices associated with early breastfeeding support. *Matern Child Nutr*. 2013;9(1):57-73.
13. Widstrom AM, Ransjo-Arvidson AB, Christensson K, Matthiesen AS, Winberg J, Uvnas-Moberg K. Gastric suction in healthy newborn infants. Effects on circulation and developing feeding behaviour. *Acta Paediatr Scand*. 1987;76(4):566-572.
14. Righard L, Alade MO. Effect of delivery room routines on success of first breast-feed. *Lancet*. 1990;336(8723):1105-1107.
15. Gangal P. *Breast Crawl: Initiation of Breastfeeding by Breast Crawl*. Mumbai, India: UNICEF Maharashtra; 2007.
16. Colson SD, Meek JH, Hawdon JM. Optimal positions for the release of primitive neonatal reflexes stimulating breastfeeding. *Early Hum Dev*. 2008;84(7):441-449.
17. Widstrom AM, Lilja G, Aaltomaa-Michalias P, Dahllof A, Lintula M, Nissen E. Newborn behaviour to locate the breast when skin-to-skin: A possible method for enabling early self-regulation. *Acta Paediatr*. 2011;100(1):79-85.
18. Moore ER, Anderson GC, Bergman N, Dowswell T. Early skin-to-skin contact for mothers and their healthy newborn infants. *Cochrane Database Syst Rev*. 2012;5:CD003519.
19. Girish M, Mujawar N, Gotmare P, Paul N, Punia S, Pandey P. Impact and feasibility of breast crawl in a tertiary care hospital. *J Perinatol*. 2013;33(4):288-291.
20. Henderson A. Understanding the breast crawl. *Nurs Womens Health*. 2011;15(4):296-307.
21. Walters MW, Boggs KM, Ludington-Hoe S, Price KM, Morrison B. Kangaroo care at birth for full term infants: A pilot study. *MCN Am J Matern Child Nurs*. 2007;32(6):375-381.
22. Dennis CL. Theoretical underpinnings of breastfeeding confidence: A self-efficacy framework. *J Hum Lact*. 1999;15(3):195-201.
23. Blyth R, Creedy DK, Dennis CL, Moyle W, Pratt J, De Vries SM. Effect of maternal confidence on breastfeeding duration: An application of breastfeeding self-efficacy theory. *Birth*. 2002;29(4):278-284.
24. Hannula L, Kaunonen M, Tarkka M. A systematic review of professional support interventions for breastfeeding. *J Clin Nurs*. 2008;17(9):1132-1143.
25. Aghdas K, Talat K, Sepideh B. Effect of immediate and continuous mother-infant skin-to-skin contact on breastfeeding self-efficacy of primiparous women: A randomised control trial. *Women Birth*. 2014;27(1):37-40.
26. Weimers L, Svensson K, Dumas L, Naver L, Wahlberg V. Hands-on approach during breastfeeding support in a neonatal intensive care unit: A qualitative study of Swedish mothers' experiences. *Int Breastfeed J*. 2006;1:20.
27. McInnes RJ, Chambers JA. Supporting breastfeeding mothers: Qualitative synthesis. *J Adv Nurs*. 2008;62(4):407-427.
28. Cato K, Sylven SM, Skalkidou A, Rubertsson C. Experience of the first breastfeeding session in association with the use of the hands-on approach by healthcare professionals: A population-based Swedish study. *Breastfeed Med*. 2014;9:294-300.
29. Ingram J, Johnson D, Greenwood R. Breastfeeding in Bristol: Teaching good positioning, and support from fathers and families. *Midwifery*. 2002;18(2):87-101.
30. Wallace LM, Dunn OM, Alder EM, Inch S, Hills RK, Law SM. A randomised-controlled trial in England of a postnatal midwifery intervention on breast-feeding duration. *Midwifery*. 2006;22(3):262-273.
31. Forster D, McLachlan H, Lumley J, Beanland C, Waldenström U, Amir L. Two mid-pregnancy interventions to increase the initiation and duration of breastfeeding: A randomized controlled trial. *Birth*. 2004;31(3):176-182.
32. Schmied V, Beake S, Sheehan A, McCourt C, Dykes F. Women's perceptions and experiences of breastfeeding support: A metasynthesis. *Birth*. 2011;38(1):49-60.
33. Henderson A, Stamp G, Pincombe J. Postpartum positioning and attachment education for increasing breastfeeding: A randomized trial. *Birth*. 2001;28(4):236-242.
34. Labarere J, Bellin V, Fourny M, Gagnaire J, Francois P, Pons J. Assessment of a structured in-hospital educational intervention addressing breastfeeding: A prospective randomised open trial. *BJOG*. 2003;110(9):847-852.
35. de Oliveira LD, Giugliani ERJ, do Espírito Santo LC, et al. Effect of intervention to improve breastfeeding technique on the frequency of exclusive breastfeeding and lactation-related problems. *J Hum Lact*. 2006;22(3):315-321.
36. Kronborg H, Maimburg RD, Væth M. Antenatal training to improve breast feeding: A randomised trial. *Midwifery*. 2012;28(6):784-790.
37. Colson S. Biological nurturing: The laid-back breastfeeding revolution. *Midwifery Today Int Midwife*. 2012;(101):9-11, 66.

38.Colson S. Does the mother's posture have a protective role to play during skin-to-skin contact? *Clinical Lactation*. 2014;5(2):41-50.
39.Smillie CM. How infants learn to feed: A neurobehavioral model. In: Genna CW, ed. *Supporting Sucking Skills in Breastfeeding Infants*. 2nd ed. Burlington, MA: Jones & Bartlett Learning; 2013:83-104.
40.Smillie C, Frantz K, Media M. *Baby-led Breastfeeding: The Mother-Baby Dance [DVD]*. Los Angeles, CA: Geddes Productions; 2007.
41.American College of Nurse-Midwives, Midwives Alliance of North America, National Association of Certified Professional Midwives. Supporting healthy and normal physiologic childbirth: A consensus statement by ACNM, MANA, and NACPM. *J Perinat Educ*. 2013;22(1):14-18.
42.World Health Organization. *Care in Normal Birth: A Practical Guide. Report of a Technical Working Group*. Geneva, Switzerland: World Health Organization; 1996.
43.Christensson K, Siles C, Moreno L, et al. Temperature, metabolic adaptation and crying in healthy full-term newborns cared for skin-to-skin or in a cot. *Acta Paediatr*. 1992;81(6-7):488-493.
44.Matthiesen AS, Ransjo-Arvidson AB, Nissen E, Uvnas-Moberg K. Postpartum maternal oxytocin release by newborns: Effects of infant hand massage and sucking. *Birth*. 2001;28(1):13-19.
45.Abedi P, Jahanfar S, Namvar F. Nipple stimulation or breastfeeding for preventing postpartum haemorrhage in the third stage of labour. *Cochrane Database of Systematic Reviews* 2013; Issue 11. Art. No. CD010845.
46.Marín GM, Llana MI, López EA, Fernández Villalba E, Romero Blanco I, Touza Pol P. Randomized controlled trial of early skin-to-skin contact: Effects on the mother and the newborn. *Acta Pædiatrica*. 2010;99(11):1630-1634.
47.Christensson K, Cabrera T, Christensson E, Uvnas-Moberg K, Winberg J. Separation distress call in the human neonate in the absence of maternal body contact. *Acta Paediatr*. 1995;84(5):468-473.
48.Srivastava S, Gupta A, Bhatnagar A, Dutta S. Effect of very early skin to skin contact on success at breastfeeding and preventing early hypothermia in neonates. *Indian J Public Health*. 2014;58(1):22-26.
49.American Academy of Pediatrics. Policy statement: Breastfeeding and the use of human milk. *Pediatrics*. 2012;129(3):e827-e841.
50.World Health Organization, UNICEF, and Wellstart International. *Baby-Friendly Hospital Initiative: Revised, Updated and Expanded for Integrated Care*. Geneva, Switzerland: World Health Organization; 2009.
51.Baby-Friendly USA. The ten steps to successful breastfeeding. http://www.babyfriendlyusa.org/about-us/baby-friendly-hospital-initiative/the-ten-steps; updated 2012. Accessed 19 March 2015.
52.Nakao Y, Moji K, Honda S, Oishi K. Initiation of breastfeeding within 120 minutes after birth is associated with breastfeeding at four months among Japanese women: A self-administered questionnaire survey. *Int Breastfeed J*. 2008;3:1. doi: 10.1186/1746-4358-3-1.
53.Genna CW, Barak D. Facilitating autonomous infant hand use during breastfeeding. *Clin Lact*. 2010;1(1):15-20.
54.Eidelman AI, Hoffmann NW, Kaitz M. Cognitive deficits in women after childbirth. *Obstet Gynecol*. 1993;81(5):764-767.
55.Glover R, Wiessinger D. They can do it, you can help: Building breastfeeding skill and confidence in mother and helper. In: Genna CW, ed. *Supporting Sucking Skills in Breastfeeding Infants*. 2nd ed. Burlington, MA: Jones & Bartlett Learning; 2013:105-146.
56.Holmes AV, McLeod AY, Bunik M. ABM clinical protocol #5: Peripartum breastfeeding management for the healthy mother and infant at term, Revision 2013. *Breastfeed Med*. 2013;8(6):469-473.
57.Ransjo-Arvidson AB, Matthiesen AS, Lilja G, Nissen E, Widstrom AM, Uvnas-Moberg K. Maternal analgesia during labor disturbs newborn behavior: Effects on breastfeeding, temperature, and crying. *Birth*. 2001;28(1):5-12.
58.Jordan S, Emery S, Watkins A, Evans JD, Storey M, Morgan G. Associations of drugs routinely given in labour with breastfeeding at 48 hours: Analysis of the Cardiff births survey. *BJOG*. 2009;116(12):1622-1629; discussion 1630-1632.
59.Dewey KG, Nommsen-Rivers LA, Heinig MJ, Cohen RJ. Risk factors for suboptimal infant breastfeeding behavior, delayed onset of lactation, and excess neonatal weight loss. *Pediatrics*. 2003;112(3):607-619.
60.Radzyminski S. The effect of ultra low dose epidural analgesia on newborn breastfeeding behaviors. *J Obstet Gynecol Neonatal Nurs*. 2003;32(3):322-331.

Continuing education units (CEUs) are offered for this article. To obtain CEUs online, please visit www.jmwhce.org. A CEU form that can be mailed or faxed is available in the print edition of this issue.