The Key to Increasing Breastfeeding Duration: Empowering the Healthcare Team

By

Kathryn A. Spiegel

A Master's Paper submitted to the faculty of
the University of North Carolina at Chapel Hill
In partial fulfillment of the requirements for
the degree of Master of Public Health in
the Public Health Leadership Program.

Chapel Hill

2009

_____
Advisor signature/printed name

_____
Second Reader Signature/printed name

_____
Date

Abstract

Experts and scientists agree that human milk is the best nutrition for human babies, but are healthcare professionals (HCPs) seizing the opportunity to promote, protect, and support breastfeeding? Not only are HCPs influential to the breastfeeding dyad, they hold a responsibility to perform evidence-based interventions to lengthen the duration of breastfeeding due to the extensive health benefits for mother and baby. This paper examines current HCPs' education, practices, attitudes, and extraneous factors to surface any potential contributing factors that shed light on necessary actions. Recommendations to empower HCPs to provide consistent, evidence-based care for the breastfeeding dyad include: standardized curriculum in medical/nursing school, continued education for maternity and non-maternity settings, emphasis on skin-to-skin, enforcement of evidence-based policies, implementation of 'Baby-Friendly USA' interventions, and development of peer support networks. Requisite resources such as lactation consultants as well as appropriate medication and breastfeeding clinical management references aid HCPs in providing best practices to increase breastfeeding duration.

The key to increasing breastfeeding duration: Empowering the healthcare team

During the colonial era, mothers breastfed through their infants' second summer. The pasteurization of cows' milk and development of infant formula, however, resulted in a new generation of physicians who downplayed the importance of human milk from the 1930s through the early 1970s (Wolf, 2000). Then, scientific evidence finally validated the importance of species-specific milk. Recent research studies prove the *more* human milk an infant consumes, the greater the benefits for both mother and baby (Wolf). Even the experts, American Academy of Pediatricians' (AAP), first released a policy statement in 1997 that recommends exclusive breastfeeding for 6 months followed by complimentary foods, while continuing to breastfeed for at least one year and thereafter for as long as mutually desired. The current breastfeeding initiation rates in the U.S. are on the rise. Yet, the duration of breastfeeding has not budged in the past 19 years. Because HCPs hold an influential role in the promotion, protection, and support of the breastfeeding dyad, examining the potential barriers to HCPs' support and management of breastfeeding may lead to better interventions to increase the duration of breastfeeding.

Background

U.S. Healthy People Initiative, established by the 1979 Surgeon General's Report, laid the foundation for a national preventative agenda designed to guide and measure health-related programs over time. The *U.S. Healthy People Initiatives 1990, 2000,* and *2010* contain focus areas developed by leading Federal agencies with the most relevant scientific expertise to increase quality life years and decrease disparities. Breastfeeding, on every *U.S. Healthy People Initiative* since its inception, has fallen short of the 2000 goals. In 2003 the initiation rate was 66% versus the goal of 75%, breastfeeding at six months 32.8% versus 50%. The 2010 goals added another objective to increase the breastfeeding rates at one year to at least 25% (Miller,

Cook, Brooks, Heine & Curtis, 2007). As the end of *Healthy People 2010* goals are quickly approaching, the initiation rate has exceeded the goal. Of mothers giving birth between 2005 and 2006, 77% initiated breastfeeding. Surprisingly, the rate of breastfeeding mothers at six months has remained stagnant since 1993 (McDowell, Wang, & Kennedy-Stephenson, 2006).

Women who breastfeed longest tend to be white, older, better educated and from a higher socioeconomic class (DiGirolamo, Grummer-Strawn, & Fein, 2003). DiGirolamo et al. (2003) and many other studies found the known influences include: baby's father, maternal grandmother, and mother's close friends. Another potential influence, the opinions of physicians and hospital staff, is unfolding as the literature reveals HCPs' ambivalence toward promoting and supporting breastfeeding, despite agreeing breastfeeding is best. Inadequate training on breastfeeding and its management, fear of inducing guilt among mothers (DiGirolamo et al., 2003), attitudes of HCPs, outdated hospital policies and procedures, formula promotion and lack of resources all contribute to the suboptimal level of support to breastfeeding dyads by healthcare professionals.

Influence of the healthcare professional. How influential are HCPs in affecting the duration of breastfeeding? A longitudinal study by DiGirolamo et al. (2003) found that perceived neutrality of the hospital staff's attitude toward breastfeeding during the delivery and postpartum hospital stay, not the prenatal visits, was associated with an increased risk for breastfeeding cessation by six weeks postpartum. DiGirolamo et al. (2003) explained timing may play a key role; the hospital staff's support during the initial breastfeeding experience creates the largest impact. Of note, those mothers without a strong prenatal intention to breastfeed were even more susceptible to messages they received about breastfeeding during their inpatient stay (DiGirolamo et al., 2003).

Another study of 1163 breastfeeding dyads, found fewer mothers discontinued breastfeeding at the 12 week mark if they received encouragement from their clinician (doctor, nurse, lactation consultant) to breastfeed(Taveras, Capra, Braveman, Jensvold, & Gabriel, 2003). Taveras et al. (2003) also cited supporting evidence from a prospective, observational study finding health system support during the initial inpatient stay and early post-discharge period was associated with successful breastfeeding (Taveras, Capra, Braveman, Jensvold, & Gabriel, 2003).

In 2000 the American College of Obstetricians and Gynecologists recommended exclusive breastfeeding until the infant is about six months old after discovering just 23% of obstetricians counseled mothers on breastfeeding (DiGirolamo et al., 2003). A study highlighted in an educational bulletin for obstetricians and gynecologist found mothers who perceived their physician favored breastfeeding were 80% more likely to breastfeed for longer durations compared to just 29% who perceived their physicians favored formula, and 61% who perceived no preference (DiGirolamo et al., 2003). The benefits of mere encouragement from HCPs is reflected in yet another study by Lu, Lange, Slusser, Hamilton, and Halfon (2001), that demonstrated close to 75% of women initiated breastfeeding if their physician or nurse encouraged them, while a mere 43% of women breastfed without encouragement (Miller et al., 2007).

HCPs' responsibility to support breastfeeding. Do health care professionals bear the responsibility to support breastfeeding? The 'rights argument,' based off the Convention on the Rights of a Child (Labbock, 2008), reasons every child has the right to receive the optimal nutrition – breast milk. Therefore, it is the HCPs responsibility to promote and support breastfeeding. Dr. Nancy Wright states, "As ethical, caring professionals we owe our patients

accurate information, appropriate guidance and long-term support. Let us continue to promote what is *best* for infants" (Labbok, 2008, p. 81).

The AAP has recognized breast milk as "uniquely superior for infant feeding and is species specific; all substitute feeding options differ markedly" (as cited by Crenshaw, 2005, para. 4). The United Nations International Emergency Children's Fund (UNICEF), the World Health Organization (WHO) and other national and international organizations recommend breastfeeding for two years of age or longer (Crenshaw). According to the Center for Disease and Control (CDC) as of 2005, only 32% of U.S. infants are exclusively breastfed through three months and a mere 12% at six months, significantly less than *The Healthy People 2010* goals of 40% and 17% respectfully (CDC, 2008).

Benefits of breastfeeding for the infant. Multiple studies have documented the remarkable benefits of breastfeeding. Not only does breastfeeding lead to a reduction in post-neonatal infant mortality rates in the U.S. (Labbok, 2008), it also decreases risk of multiple acute, chronic and enduring conditions. Please see Appendix A for more details.

Breast milk enhances motor and cognitive development, strengthens the facial muscles and enables higher IQ scores (Crenshaw, 2005). Human milk not only protects the infant passively, but proactively stimulates immune system development, responding better to immunizations than formula-fed infants. Hasselbalch, Jeppesen, Engelmann, & Michaelsen (1996) studied 47 infants in Copenhagen and discovered exclusively breastfed infants had twice as large thymus glands. This gland helps to identify and kill antigens such as bacteria, viruses, and malignant cells. Breastfeeding benefits endure even into adulthood. For example, total serum cholesterol and low-density lipoprotein levels are lower in adults who were breastfed. In

addition, women who were breastfed are at a lower risk for premenopausal breast cancer (Crenshaw, 2005).

Premature infants and impact of human milk. Breast milk is extremely important for premature infants whose age alone forces them into a higher risk bracket for many of the conditions breast milk protects against. Cognitive development is even more marked among premature breastfed infants (Crenshaw, 2005). The composition of a mother's milk following premature delivery differs from a full-term mother's milk. This specifically designed human milk for premature infants' amounts to less medication and shorter hospital stays, not to mention decreased mortality and morbidity with lower rates of necrotizing enterocolitis, retinopathy of prematurity, and sepsis. Banked human milk, with reduction in some protective and anti-infective qualities, is the next best thing to mother-specific milk. This milk still leads to significantly improved health outcomes as compared to formula-fed infants (Crenshaw, 2005).

Maternal Benefits. Not only does the infant receive immediate and lifetime benefits, but breastfeeding mothers experience considerable health benefits. Maternal benefits include a decreased risk of: osteoporosis and hip fractures, ovarian and breast cancer (Wenner, 2007), and post-partum hemorrhage (Miller et al., 2007). A large scale analysis of 47 studies from 30 countries revealed a lower incidence of breast cancer, with the risk decreasing by 4 percent every 12 months of breastfeeding in a woman's lifetime (Crenshaw, 2005). Mothers typically burn between 300-500 calories a day breastfeeding, so returning to pre-pregnancy weight earlier, in turn, often decreases many of the health risks that accompany being overweight or obese.

Contrary to many HCPs beliefs, breastfeeding helps mothers relax and produces a diminished response to stressors and pain due to the release of oxytocin (Wenner, 2007). Breastfeeding *exclusively* for the first six months also provides low-cost birth control, with

greater than 98% efficacy rate (Lawrence & Lawrence, 2005). This lactational amenorrhea usually lasts six to eight months, potentially protecting breastfeeding mothers against anemia. In addition, psychological benefits include: increased self-esteem, increased bonding and infant attachment, and decreased perceived stress (Crenshaw, 2005).

Society benefits. Breastfed children require fewer medical visits, shorter hospital stays, and fewer prescriptive drugs to treat infections (Crenshaw, 2005). If breastfeeding rates increased from the 1998 levels (both initiation and six months duration) to the *Healthy People 2010* goals of 75% and 50% respectively, the U.S. Department of Agriculture in 2001 estimated $3.6 billion in savings. This is hugely underestimated, as the figure was based on only three illnesses: ear infections, gastroenteritis, and necrotizing enterocolitis (Crenshaw). Public health programs reap the benefits of more breastfeeding moms by decreasing costs for programs such as WIC, which provides infant formula for low-income families. Even the Earth benefits from increased breastfeeding by decreasing the amount of bottles and cans manufactured and disposed of for the use of infant formula (Miller et al., 2007).

Employer benefits. Parents and employers benefit, too, as breastfeeding women lose fewer work days taking their children to doctor appointments. Flexible employers who allow time and a place to pump or provide a nearby daycare, will benefit from improved employee retention, productivity rates, and job satisfaction (Crenshaw, 2005).

Risks of infant formula. Unlike breast milk which produces antibodies in response to maternal and infant exposure to organisms, infant formula fails to provide the benefits of auto-immunization (Wenner, 2007). Human milk contains live cells (i.e. leukocytes and neutrophils), specific antibodies, and multiple antimicrobial factors, which infant formula cannot replicate. Moreover, infant formula carries inherent risks by inaccurately mixing, diluting to save on

money, mislabeling or processing errors from the manufacturer. Subsequently, nutritional deficiencies are often identified and reformulated (Crenshaw, 2005). Furthermore, the CDC analyzed 46 cases and determined an association exists between the bacterium Enterobacter sakazakii and powdered infant formula. Although microbiologic surveys of powdered infant formulas reveal a decrease in the rate of E. sakasakii contamination from 1988-2003(14% to 2.4%), the "reported outcomes are often severe: seizures; brain abscess; hydrocephalus; developmental delay; and death in as many as 40%–80% of cases" (Bowen and Braden, 2006, para. 1).

Understanding the problem

Lack of breastfeeding curriculum in schools. So, if breastfeeding is so beneficial why do so many clinicians fail to advocate and support the breastfeeding dyad? Wellstart International (2004) noted lack of knowledge as a key contributor to the failure to reach the *Healthy People 2000/2010* goals (as cited in Miller et al., 2007). A 1995 survey of over 4,900 healthcare providers, who regularly encounter the breastfeeding dyad, discovered 25% of HCPs disagreed that exclusive breastfeeding was the most beneficial sources of infant nutrition. Most providers did receive at least one lecture of breastfeeding during their medical school. Almost half of them, though, failed to receive any direct breastfeeding training, especially obstetricians (Freed et al., 1995). Furthermore, Schanler and colleagues' 2005 survey of 262 family practitioners, pediatricians and OB/GYNs discovered only 65% recommended breastfeeding for the first month and only 37% recommended it for one year (as cited in Krogstrand & Parr, 2005). Surprisingly, only 31% of those surveyed recognized they needed more training in breastfeeding management or problem-solving skills (Krogstrand & Parr).

In a survey of two baccalaureate and three diploma nursing schools in Missouri, at least 25% of graduating nurses did not know that breast milk is the optimal nutrition for an infant with protective and ant-infective properties (as cited in Crenshaw, 2005). Bernaix's study of 48 postpartum nurses found that an average of only three continuing education hours specific to breastfeeding were taken over a two year period. Bernaix concluded that breadth of knowledge on breastfeeding proved essential to providing effective breastfeeding support (Ebersold, Murphy, Paterno, Sauvager, & Wright, 2007). Although some studies reported that increased knowledge leads to more positive attitudes among health care professionals (Spear, 2003), others suggested more complex dynamics under the surface.

Poor clinical management of the breastfeeding dyad. What guidance has lead to the potential early cessation of breastfeeding? Many clinicians, especially those who do not routinely care for breastfeeding women, have inaccurate, outdated, or limited knowledge of breastfeeding (Crenshaw, 2005). In a medical/surgical setting, HCPs may fear medication incompatibility with breastfeeding and be unaware of a mother's need to pump or feed immediately before and after a surgery. Pediatric HCPs may not take the advantage of the natural therapeutic effects of breastfeeding during an infant procedure to reduce pain (Crenshaw).

Sometimes, a well-meaning HCP will consult reputable resources that were not developed with lactating women in mind, for instance, the Physicians' Desk Reference (PDR). Often the drug safety is unknown because very few drug companies studied drugs in breastfeeding women (Crenshaw, 2005). Furthermore, most package inserts on medications advise against giving medication to pregnant or lactating women due to liabilities, not based on actual information of transfer into milk (Wenner, 2007).

The type of growth charts HCPs consult greatly impacts clinical decisions that potentially lead to early cessation of breastfeeding. Breastfed babies grow at different rates than formula fed infants, yet many pediatricians use a growth curve designed for formula fed infants. The U.S. CDC developed the 2000 growth charts based on five national surveys performed between 1963 and 1994 to determine current trends in infant and children growth rates. The WHO Child Growth Standard, released in 2006, is based on an internationally represented sample (including the U.S.) and serves as the first tool to measure *optimum* growth rather than current growth (Onis, Garza, Onyango, & Borghi, 2007).

Compared to the U.S. CDC growth curve, the WHO Child Growth Standard screens fewer infants as undernourished and more infants as overweight/obese (Onis et al., 2007). Because the rate of growth slows during four to six months of age, misinterpretation of normal breastfed infant growth by pediatricians may lead to early cessation when mothers perceive they have a low milk supply (Spear, 2003). Guise and Freed's (2000) survey of 107 family medicine and pediatrician residents from North Carolina revealed almost all plotted infants on growth curves, but not one used a growth chart specific to breastfed infants. Surprisingly, only 5% knew the rate of growth decreased in a breastfed infant after four months of age (Guise & Freed, 2000).

In addition, breast milk is more easily digestible than infant formula. As a result, breastfed infants may feed more frequently, especially if mothers have a small storage capacity for milk. Mothers need reassurance from pediatricians of normal breastfed infant behavior, rather than suggesting mothers supplement with infant formula if the infant does not appear satisfied. Pediatricians should also be aware of the physiologically normal changes that occur to breastfeeding mothers over time. Mothers may no longer experience the sensation of milk let-

down, fullness of breasts, or leaking as the body hones in on producing exactly the amount the baby needs. Many working mothers will even notice decreased amounts of pumped breast milk. Reassurance and possible referral to a lactation consultant should be the pediatricians' priority to prevent early cessation from perceived insufficient milk supply.

Outdated hospital policies. Many hospitals and clinics operate under policies and procedures that are outdated. In a society where the legal system tends to drive hospital policy, many HCPs adopted guidelines that focus on catastrophic, rare events rather than common problems (Taveras et al., 2003). For example, a policy mandating a two to three hour feeding frequency may look out for the rare infant whose blood sugar might drop dangerously low. However, this time restriction leads to frustration and perceived insufficient milk supply in mothers whose babies cluster feed and then space out a feeding for four to five hours. Parents find themselves looking out for the clock and miss out on feeding cues that signal when the infant is most receptive toward breastfeeding. This potentially leads to frustration, introduction of infant formula and cessation of the breastfeeding relationship.

DiGirolamo et al. (2008) compiled data from 2,687 hospitals and birthing centers across the U.S. on maternity practices that influence breastfeeding. An alarming 65% of facilities advised limiting suckling at the breast to specific time parameters, and 45% reported giving pacifiers to over half of infants born full-term. These practices are mentioned in multiple studies as unsupportive to breastfeeding. The AAP's recommendation for exclusive breastfeeding failed to be incorporated in the standard practice of 24% of facilities that reported routinely supplementing over half of healthy, full-term newborns. Out of 100 possible points for encouraging skin-to-skin by practices such as rooming-in with the mother, the average score

reported across the U.S. was a mere 70 (DiGirolamo et al., 2008). See Appendix C for more details.

Advertising infant formula. Another unsupportive breastfeeding practice stems from the advertisement of infant formula in health care settings. Because parents view providers as the authority on infant feeding, noticing infant formula advertisements displayed in the waiting rooms misleads parents to believe infant formula is recommended (Miller et al., 2007). This is further confirmed when they receive sample bottles of infant formula in free baby bags given at discharge, reported as occurring in an overwhelming 70% of hospitals and birthing centers across the U.S. (DiGirolamo et al., 2008). One study found that a large portion of obstetricians use informational brochures developed and distributed by formula companies: infant feeding literature (41%), pregnancy brochures (57%), and other educational materials with free formula offers (61%; Miller et al., 2007).

Impact of staffing shortage. Time and staffing shortages significantly impacts breastfeeding support from health care providers. Instilling confidence in a mother's ability to breastfeed and provide all the nutrition her infant needs may require a big time investment from nursing staff as well as physicians in outpatient settings. Achieving a proper infant latch can take anywhere from minutes to days and even weeks and months for a small portion of infants. With large patient loads due to short staffing or lack of resources (i.e. lactation consultant) on night shift, a nurse may succumb to his/her own frustrations, fueled by the mother's frustrations or vulnerable moments from lack of sleep. The nurse may then either suggest or respond to the mother's request to give formula. Physicians, faced with patients every 15 minutes, may feel pressured and resort to the quicker clinical pathway to ensuring adequate nutrition - recommending infant formula or introducing complimentary foods before six months.

Impact of incongruent practices. Many incongruent practices exist among healthcare professionals. These inconsistencies create confusion, frustration, and self-doubt in breastfeeding mothers, negatively affecting the breastfeeding relationship. Miller et al. (2007) noted similar barriers to breastfeeding among 31 mothers interviewed including: "confusing, negative, or unsupportive feedback from providers and family members." Between 'bags of tricks' HCPs' utilize, personal experiences of anecdotal evidence (Nelson, 2007), and outdated practices, patients are often left trying to decide who to believe – his/her pediatrician, obstetrician, mother-baby nurse, lactation consultant or perhaps, friends, relatives, fathers or news media. The same mothers reportedly received their breastfeeding information from "books, magazines, Internet sites, videos and brochures" (Miller et al., para. 15).

Why do so many differences in breastfeeding support, promotion, and education exist between healthcare professionals? Nelson's review of current studies reveals "varying educational backgrounds, levels of 'buy-in', experiences, time constraints, degree of focus, perspectives and perceptions of what constitutes patient advocacy related to breastfeeding among health care professionals all contribute to the well-intentioned, yet uncoordinated efforts that result in inconsistencies" (Nelson, 2007, p. 37).

Perhaps, the U.S. culture discourages HCPs from promoting breastfeeding to a society where most women return to work. Undoubtedly, if the answer were simple, the healthcare advocates would have employed the solution swiftly around the globe.

Attitudes of HCPs. Not unique to the U.S., a study of 168 midwives and mother-baby nurses in Sweden revealed attitudes are deeply rooted among HCPs and difficult to alter. Those HCPs that focus more on the medical risk perspective, desire more control of the breastfeeding. Thus, they instill less trust in the mother-infant dyad's ability to manage breastfeeding. Ekstrom,

Matthiesen, Widstrom, & Nissen (2005) used a pilot tested tool to discern four factors that categorized breastfeeding attitudes among HCPs:

1. Regulating: experts know best; feed according to the clock
2. Facilitating: baby driven breastfeeding
3. Disempowering: HCP has little interest in breastfeeding and views baby as a nuisance to mother who takes in very little breastfeeding information during pregnancy
4. Antipathy factors: HCP is ignorant on breastfeeding and cannot empathize with mothers

The Department of Health and Human Services (DHHS) provides helpful examples of what constitutes support. The chart in Appendix B denotes a range from strongly encouraging to strongly discouraging. It also highlights the multitude of vehicles HCPs use to communicate the message to breastfeed: experiential, non-verbal communication, verbal communication, and physical contact (DHHS, 2006).

Guilt factor guiding HCPs' breastfeeding promotion. Even nurses who are advocates of the breastfeeding dyad will often switch gears to becoming the mother's advocate if she decides not to breastfeed or discontinue her breastfeeding efforts (Nelson, 2007). Often, physicians will also stop promoting once the line is drawn, citing they do not want to make the mothers feel guilty. Dr. Jack Newman, Canadian pediatrician and breastfeeding guru, opposes this line of thinking, reasoning that those mothers who choose to formula feed after being educated on the benefits of breast milk do not feel guilty, but rather the mothers who desired or attempted to breastfeed feel guilty (Labbok, 2008).

Cultural belief systems. Nelson's (2007) existential-phenomenological study revealed a strong cultural belief system among the participants, which strongly influenced their

breastfeeding support. This research approach involved recording behaviors and experiences described by maternal-child nurses. The next step involved writing both an 'exhaustive description' of the phenomenon and 'fundamental structure' representing the universal meaning and significance. Subsequently, Nelson achieved a consistent thematic redundancy through the extensive interviewing process. Among the 12 maternal-child nurses interviewed from two U.S. hospitals, Nelson discovered that personal experiences contributed to this belief system. Their personal positive or negative breastfeeding experience influenced not only nurses' suggestions, but their whole approach to breastfeeding support. Maternal child nurses who never breastfed, tended to adhere to "the book" or past professional experiences.

Privileged vantage point. By spending more time with the mother, the nurse gains a privileged vantage point, a theme common in Nelson's (2007) study. Witnessing the frustration and internal struggle of a mother attempting to breastfeed may lead some nurses to err on the short term fix of infant formula to allow mothers to rest or decrease their stress (Nelson, 2007). One in four breastfeeding infants receive infant formula supplementation before discharge (CDC, 2008) which can deflate a mother's confidence that her body is able to provide adequately for her infant.

Gatti (2008) reviewed studies that revealed an association between the use of infant formula during the hospital stay and early cessation due to perceived milk supply insufficiently A significant portion of mothers, ranging from 23%-56%, reported perceiving their milk supply as too low. Deeming milk supply as inefficient is a false assessment because milk production does not usually occur until day three to five postpartum, after mothers are discharged (Gatti, 2008). Colostrum, dense in nutrients and antibodies, is produced initially at increasing rates,

which coincides with the increasing growth of the infant's stomach capacity. In other words, colostrum provides adequate nutrition for most infant before the milk production.

Action steps to empower Healthcare professionals

Education. With all the mounting evidence of unsupportive breastfeeding behavior, what can be done about this problem? Educating HCPs is a start. The Department of Health and Human Services (DHHS) developed a *Blueprint for Action on Breastfeeding* (2000) advising, "Train health care professionals who provide maternal and child care on the basics of lactation, breast-feeding counseling, and lactation management during coursework, clinical and in-service training, and continuing education" (p. 19).

A joint effort between AAP and the Maternal and Child Health Bureau has developed a Breastfeeding Promotion in Physicians' Office Practices (BPPOP III) program for pediatric HCPs and residency programs. Part of the program entails a standardized, culturally competent breastfeeding curriculum for pediatric and family practice residents. Pilot-testing the curriculum commenced in 2006. The final curriculum is scheduled for release in the winter of 2008/2009 for nation-wide dissemination. Geraghty, Riddle, and Shaikh (2008) suggest pediatricians be adept at: knowing the composition of breast milk, recommending frequency and duration of breastfeeding, assessing breast milk intake by infant, identifying ineffective latch, recommending resources for breast pumps, and discussing the contraindications to breastfeeding in rare circumstances.

Nurses are confronted with many situations in the initial breastfeeding relationship that require evidence-based answers to protect the breastfeeding relationship. The University of Missouri Sinclair School of Nursing developed modules requiring pre- and post-testing, resulting in nursing students who felt more confident about assisting the breastfeeding dyad and

anticipated positive health outcomes for them. To achieve an even greater impact, the University partnered with the Missouri Department of Health, which disseminated the web-based modules to local health departments and HCPs throughout the state. The modules load quickly to maximize time and topics include (Miller, 2007, box 3):

Anatomy and Physiology of the Breast

Overview of Breastfeeding and American Academy of Pediatrics Standards

Nutrition for Infants and Mothers•

Breastfeeding Statistics and Talking with Mothers Regarding Decision to Breastfeed•

Latch on and Techniques for Assisting Mothers with Breastfeeding•

Pumping and Storage of Breast Milk•

Challenges of Lactation: Provider's Guide to Common Questions from Breastfeeding Mothers•

Economics of Breastfeeding

Ebersold et al. (2007) found research emphasized that mothers desire nurses with a 'hands-on' approach, helping with positioning the babies for latch, staying throughout the entire first feeding in case questions arise while giving reassurance and feedback throughout the inpatient stay. Mothers also appreciated advice on sore nipple management, timing of feedings, milk expression and storage, and nutrition. As mothers often put their infants' health before their own, this study suggests that mothers appreciate a reminder to rest and relax. Of note, mothers find anecdotal evidence in the form of personal stories that differ from the providers' information the *least* helpful (Ebersold et al.).

Importance of skin-to-skin contact. One extremely beneficial intervention that nurses can teach mothers and requires little time on the part of the very busy nurse is skin-to-skin contact (SSC). Stripping the infant down to a diaper and hat and placing infant on mom's bare chest is associated with longer periods of breastfeeding, better newborn temperature regulation as well as

improving a mother's responsiveness, bonding, and confidence (Crenshaw, 2005). Instead of reaching for infant formula as a quick fix to rousing a sleepy baby to feed, nurses should encourage copious amount of SSC. It allows an infant to organize him/herself, smell the colostrum, and even elbow his/her way down in an attempt to latch to the breast. Placing the infant directly on the mother immediately after birth will even help prevent nosocomial infections as the infant becomes colonized with the mothers' bacterial flora instead of the hospitals' (Romano & Lothian, 2008).

The Cochrane systematic review of early SSC involving 30 trials of 1,925 mother-baby couplets revealed a overwhelmingly positive impact on "maternal affectionate touch and contact behavior during breastfeeding within the first few days, breastfeeding initiation and duration, maintenance of infant temperature, infant crying, newborn blood glucose and cardiopulmonary stabilization, and maternal satisfaction" (Romano & Lothian, 2008, p. 101). These benefits were especially pronounced in late preterm infants. Even a year later, differences in maternal attachment behaviors existed between the intervention and control groups. Because the evidence is compelling and absolutely no negative effects of SSC were found, the AAP recommends *routinely* placing infant on the chest after delivery. One survey noted only 34% of mothers reported their babies being in their arms after birth (Romano & Lothian, 2008).

Supportive practices in outpatient settings. A randomized control trial by Kistin, Benton, Rao, and Sullivan (1990), demonstrated that individual or group interventions through a physician's office increased breastfeeding rates. This should encourage health care professionals to recognize and act on expanding their influence on mothers' feeding decisions. Geraghty et al. (2008) suggest HCPs first congratulate the mother and her partner or spouse for providing optimal nutrition. Pediatricians should become comfortable with extending their services to treat

breastfeeding mothers for conditions related to breastfeeding (i.e. candidasis, local breast infection, decreased milk supply). Although these encounters may be lengthy, billing insurance for two encounters, mother and baby, will help with compensation. Geraghty et al. (2008) recommends the following interventions for out-patient settings:

1. Advertise practice as baby-friendly
2. Eliminate formula advertisements/freebies
3. Establish a lactation room
4. Refer to a lactation consultant as needed
5. Train staff to appropriately phone-triage for the breastfeeding dyad
6. Discuss goals of duration with parents
7. Encourage exclusively breastfeeding for 6 months, then for at least a year with complimentary foods
8. Develop a packet of information and resources for the prenatal mother
9. Keep a stock of breastfeeding supplies (hand-pumps, nipple shells/shields)
10. Educate staff and provide updated literature/resources (lactation and medicine)
11. Stock exam rooms with flip-charts to demonstrate a good latch
12. Develop a handout on updated resources in the community (classes, programs, pumps and other supplies)
13. Provide information on transition to work and continuing to breastfeed
14. Develop a flyer explaining the new Vitamin D recommendation from the AAP in a manner that reassures mothers their milk is still superior to formula

Supportive practices for inpatient settings. For inpatient pediatric settings Geraghty et al. (2008) recommends HCPs should advocate for:

1. Proper stock of breastfeeding supplies
2. Lactation support and services
3. Expressed milk refrigeration policies
4. Encouragement of feedings at the breast if well enough (Intake and Output measured by weighing before and after feeds)
5. Protocol for dispensing donor breast milk (or consider a partnership with a hospital that has a milk bank)
6. Partnership to allow mothers to stay nearby
7. Breastfeeding resources on the ward
8. Follow-up within three days of discharge
9. Pediatricians confer with lactation consultant
10. Pediatricians continue to support breastfeeding through dehydration or hyperbilirubinemia

Supportive practices in non-maternity settings. As more and more mothers decide to breastfeed, a HCP outside mother-baby care will likely find him/herself treating a breastfeeding dyad. Staff on non-maternity setting should know the benefits of breastfeeding and the risks of weaning. If an elective procedure that may interrupt breastfeeding can wait, the provider should counsel the mother on the benefits of maintaining the breastfeeding relationship rather than weaning.

Supporting breastfeeding is as simple as allowing the mother to establish a supply of breast milk before a procedure. The HCP should support either pumping to prevent engorgement and maintaining the milk supply or allowing the infant to nurse while the mother is in the recovery room. Changing anesthesia medications to those compatible with breastfeeding

demonstrates a true advocate for breastfeeding. A little encouragement for the mother to rest between feedings and co-locating the infant and mother will help reduce her stress. If an incision is made on the breast near where the infant latches, then have the mother pump on that breast to reduce her risk of infection and nurse on the other. The HCP should refer the mother to a lactation consultant as needed (Wenner, 2007).

Medications and breastfeeding. Avoiding interruption of breastfeeding, may require looking medications up in a drug reference specifically for lactation and changing the type of medication as needed. Counseling the mother that her medications are safe to take while breastfeeding, reflects standard of care (Wenner, 2007). Dr. Thomas Hale, a clinical pharmacologist and leading expert in the use of medications in breastfeeding, is currently a Professor of Pediatrics and author of four breastfeeding reference book used by HCPs across the globe (Hale, 2009). He notes that only less than one percent of most medications pass into the breast milk. Rarely does the amount that passes through provide a clinically significant dose to the infant. Dr. Hale advises the following ways to limit the amount of medication that passes into human milk (Wenner):

1. Take medication immediately after breastfeeding
2. Take fat-soluble medications at bedtime (highest fat content of breast milk is midday)
3. Encourage mothers to inform providers of their desire to continue to breastfeed

HCPs can find more specific information by consulting the proper resources. See Appendix D for further information on excellent references regarding drugs during lactation. In addition, providers should ask themselves the following questions before prescribing medications to lactating women (Crenshaw, 2005):

1. Is the medication necessary?

2. Will the medication affect maternal milk supply?
3. Can another drug be substituted?
4. Is the drug approved by the Food and Drug Administration (FDA) for use in infants?
5. Does the medication transfer readily into human milk?
6. Is the medication eliminated or poorly absorbed in the gastrointestinal tract when taken orally?
7. Can a short-acting drug be prescribed instead of long-acting or sustain-release medications?
8. Can the mother's dose be timed to minimize transfer to the breast milk?
9. What remarkable history on the infant needs to be considered?
10. Is it possible to monitor the drug's effect on the baby?

Appropriate references needed for HCPs. Healthcare facilities should have evidence-based references specifically addressing clinical management of the breastfeeding dyad available to staff. Please see Appendix E for specific suggestions. By consulting references books and the plethora of Internet resources (Appendix F), HCPs can expand their knowledge and feel empowered to tackle complex breastfeeding relationships.

Consistent breastfeeding support. Empowering mothers through knowledge and keeping that knowledge consistent among the health care team proves important. Nelson (2007) finds the situation-specific theory of development helpful to explain the broader context of knowledge development:

> This theory suggests that the more congruity and less conflict that exists between a particular mother and infant, between this dyad and each of her support

> networks, the more effective the networks will be in facilitating the movement of the family toward a 'salutary' breastfeeding experience (healthful, subjectively satisfying). (p. 36)

Addressing inconsistent breastfeeding support involves grasping multiple institutional as well as personal factors. Therefore, nurturing a strong, collaborative team-approach to policy changes is necessary. Success comes from allowing all team members opportunities to openly discuss feasible ways to incorporate evidence-based breastfeeding support into practice. This allows greater buy-in amongst staff and the ensuing collaboration will combat the speed bumps of conflict and continued inconsistencies (Nelson, 2007). HCPs should strive to meet the expectations of the DHHS' (2000) *Blueprint for Action on Breastfeeding: "*Ensure that breastfeeding mothers have access to comprehensive, up-to-date, and culturally tailored lactation services provided by trained physicians, nurses, lactation consultants, and nutritionists/ dietitians" (p. 19).

Leadership needed. As the advocate for the breastfeeding dyad, nurses are in the prime position to lead the healthcare team in providing the best, client-focused care that is rooted by evidence. This means nurses may need to question the providers' orders, especially medication orders that are contraindicated with breastfeeding (Romano & Lothian, 2008). Empowering parents to do the same may ultimately protect the duration of the breastfeeding relationship. More physicians need to carry the torch, as well, in order to expedite changes that support breastfeeding. The 'top-down' approach to implementing baby friendly interventions may produce more consistent results when buy-in is already achieved by providers.

Best practice interventions. What are the most effective ways for HCPs to increase the duration of breastfeeding? A literature review of randomized control trials conducted by Chung,

Raman, Trikalinos, Lau, & Ip (2008), cited multiple approaches ranging from formal classroom instruction, clinician interventions in out-patient settings, hospital-based interventions, and post-discharge professional or lay support. Chung et al. (2008) noted the best window to promote and support the breastfeeding dyad is during and after pregnancy. In addition, lay peer support significantly increased the short-term duration of breastfeeding. Chung and colleagues concluded breastfeeding interventions significantly increased the short- and long-term duration of breastfeeding, especially when combined with peer support (Chung et al.).

The Promotion of Breastfeeding Intervention Trial (PROBIT), a cluster-randomized trial conducted June 1996 – December 1997 with a one year follow-up, was conducted in the Republic of Belarus at 31 hospitals and polyclinics. Modeled after the UNICEF and WHO Baby Friendly Hospital Initiative, the postpartum interventions not only increased the duration and exclusivity of breastfeeding, but demonstrated actual health benefits specifically in those infants (Kramer et al., 2001). Notably, mothers and babies usually stay four to five days in the hospital after delivery, giving HCPs more time to provide direct support (Kuehn, 2008). This suggests that aggressive follow-up and access is needed post-discharge in the U.S., where newly delivered moms are often released 24 hours later. Interventions effective in other studies include: rooming-in with the mother, feeding on demand, and providing post-discharge support for mothers with breastfeeding difficulties (Kuehn).

Baby-Friendly USA. With so much breastfeeding research, where does a health care facility start? Serving as an evidence-based model for incorporating the standards necessary to promote, protect, and support breastfeeding, earning the ‘baby friendly USA’ status based on the UNICEF and WHO gives health care settings a goal to strive for and achieve. First launched in 1991, the Baby-Friendly Hospital Initiative (BFHI) designates maternity settings around the

globe as centers for breastfeeding support. The DHHS even endorses the BFHI (2000). This 'baby friendly USA' designation is achieved when a facility implements the '10 Steps to Successful Breastfeeding:' specifically designed for implementation within the U.S. (Baby-Friendly USA, 2004):

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within an hour of birth.
5. Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants.
6. Give breastfed infants no food or drink other than breast milk, unless medically indicated.
7. Practice rooming-in - that is, allow mothers and infants to remain together - 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

Not only is the BFHI a prestigious award, it also helps hospitals contain costs and provides positive marketing to attract future clients. Although Baby-friendly hospitals must purchase all infant formula according to the WHO Code on the Marketing of Breast-milk

substitutes, they cannot offer patients free or low-cost human milk substitutes (Baby-Friendly USA, 2006). Potential costs for replacement of literature and other items bearing an infant formula brand name that should not be used or accepted, is a small price to pay for the consistent support and encouragement that breastfeeding moms receive from implementing the 10 steps. Insurance companies look fondly on Baby-Friendly hospitals because the longer the breastfeeding relationship is protected the less they pay for ear infections, respiratory infections, diarrhea as well as maternal complications such as post-partum hemorrhage. One study cited by Walker (2007), noted insurers paid an extra $331 to $475 per infant that never received human milk. Some insurers may even cover in-hospital lactation consultation services or reimburse hospitals at higher levels due to BFHI. In addition, many steps can serve as quality improvement projects, which the Joint Commission highly encourages (Walker).

Resources. Of course, an initiative that permeates throughout the health care setting requires key resources to ensure complete and sustainable success. Ebersold et al. (2007) reviewed recent research that points toward a positive association between delivering at a maternity ward that employs a certified lactation consultant and continuing to breastfeed upon discharge. Many hospitals are now hiring lactation consultants to meet *Healthy People 2010* goals (Ebersold et al.). Kuehn (2008) also noted studies confirming the importance of nurse or lactation consultants, especially concerning proper latch and positioning of the infant at breast. A survey of 472 breastfeeding mothers found that inpatient lactation consultant encounters significantly helped increase initiation rates, while outpatient visits and phone services increased the duration (Tofteland, 2006).

Role of the lactation consultant. The lactation consultant can spearhead the team-approach to policy changes by providing expert advice and the latest evidenced-based research.

As with any change in policy, an extensive educational program will reinforce consistent practice. Focusing on patients' perception of HCPs' messages remains a key element to the effectiveness in applying the knowledge. Breastfeeding dyads most commonly encounter problems (perceived insufficient milk supply, breast soreness, and problems with latch) within the first two-three days after discharge (Taveras et al., 2003), requiring extensive follow-up. Not only should HCPs see breastfeeding dyads within a couple days after discharge, but ideally a lactation consultant or mother-baby nurse should call them within the first one to two weeks and be available for telephone or walk-in consultations as needed. Prenatal and postpartum inpatient and outpatient visits should be reinforced by simple and concise, evidence-based literature (DHHS, 2000).

Peer Support. HCPs should also be abreast of community support available to refer the breastfeeding dyad. Reducing barriers and increasing encouragement in the form of peer support provides an effective intervention, especially since women are highly influenced by their social network (Shealy, Li, Benton-Davis, & Grummer-Strawn, 2005). Through a systematic review, Fairbank, Renfrew, Woolridge, Snowden, and Lister-Sharp (2000), found peer support programs effective in increasing the initiation and duration of breastfeeding. The lactation consultant may also conduct additional support groups in the hospital setting, especially if the community is lacking a LaLeche League.

The LaLeche League provides a wonderful opportunity for a peer-based support group by offering monthly meetings, 24 hour hotline, and home visits. Leaders are mothers experienced in breastfeeding who volunteered to complete an accreditation process involving training and education on breastfeeding management, parenting, child development, and communication skills to support and counsel mothers effectively (Shealy et al., 2005).

Using data from a U.S.-based randomized trial, Chapman, Damio, and Perez-Escamilla (2004), found that breastfeeding women who introduced infant formula within the first 24 hours (risk factor for breastfeeding cessation), but received the peer support intervention were 12 times as likely than the control group to maintain breastfeeding at three months. The study concluded that peer support serves as a culturally competent, cost-effective and individually tailored support for breastfeeding mothers (Chapman et al., 2004). The Department of Agriculture, responsible for the WIC program, jumped on this evidence-based initiative to nationally institutionalize peer counseling as a core service. After extensive, standardized training, peer counselors provide telephone consults, home visits, inpatient visits, breastfeeding classes and postpartum support groups for breastfeeding mothers (Shealy et al., 2005).

Conclusion

More research is needed to provide a clear, evidence-based strategy for optimizing HCPs' support for breastfeeding. Specifically, methods to induce buy-in and consistency among staff assisting the breastfeeding dyad during their hospital stay after delivery. HCPs can forge steps toward increasing their knowledge and developing evidence-based, feasible policies that promote, protect, and support breastfeeding. In addition, following the breastfeeding dyad closely after discharge and referring to peer support networks will empower mothers to breastfeed longer. Hopefully, these actions will chisel away at the bolder blocking a change in the duration of breastfeeding since 1993. Half the battle was won by convincing mothers to initiate breastfeeding, now HCPs must strive to nurture breastfeeding relationships to go the distance.

References

American Academy of Pediatrics. (1997). Breastfeeding and the use of human milk. Retrieved February 9, 2009, from http://aappolicy.aappublications.org/cgi/content/full/pediatrics;100/6/1035

American Academy of Pediatrics. (n.d.). Breastfeeding promotion in physicians' office practice (BPPOP III) program. Retrieved March 12, 2009 from, http://www.aap.org/breastfeeding/new%20bppopIII.cfm#ResidencyCurriculum

Baby-Friendly USA. (2004). The baby-friendly hospital initiative. Retrieved February 7, 2009, from http://www.unicef.org/programme/breastfeeding/baby.htm

Baby-Friendly USA. (2004). The ten steps to successful breastfeeding. Retrieved March 10, 2009, from http://www.babyfriendlyusa.org/eng/10steps.html

Baby-Friendly USA. (2006). Info for hospitals and birthing centers. Retrieved March 10, 2009, from http://www.babyfriendlyusa.org/eng/04.html

Bowen, A. B. & Braden, C. R. (2006). Invasive *Enterobacter sakazakii* disease in infants. Center for Disease and Control: Emerging infections, 12(8). Retrieved February 11, 2009, from http://www.cdc.gov/ncidod/EID/vol12no08/05-1509.htm

Center for Disease and Control. (2008). Breastfeeding among U.S. children born 1999—2005, CDC National Immunization Survey. Retrieved February 11, 2009, from http://www.cdc.gov/breastfeeding/data/NIS_data/index.htm

Chapman, D. J., Damio, G., & Perez-Escamilla, R. (2004). Differential response to breastfeeding peer counseling within a low-income, predominantly Latina population. *Journal of Human Lactation,* 20(4), 389–96.

Chung, M., Raman G., Trikalinos, T., Lau, J., & Ip, S. (2008). Interventions in primary care to promote breastfeeding: An evidence review for the U.S. Preventive Services Task Force [Electronic version]. *Annals of Internal Medicine,* 149(8), 565-582.

Crenshaw, J. (2005). Breastfeeding in non-maternity settings: Mothers are sometimes counseled to interrupt breastfeeding or to wean when there's no compelling medical reason to do so. *American Journal of Nursing* [Electronic version], 105(1), 40-50.

Department of Health and Human Services. (2000). Blueprint for action on breastfeeding. Office of Women's Health. Retrieved February 11, 2009, from http://www.cdc.gov/breastfeeding/

DiGirolamo, A. M., Grummer-Strawn, L. M., & Fein, S. B. (2003). Do perceived attitudes of physicians and hospital staff affect breastfeeding decisions? [Electronic version]. *Birth*, 30(2), 94-100.

DiGirolamo, A. M., Manninen, D. L., Cohen, J. H., Shealy, K. R., Murphy, P. E., MacGowan, C. A., Sharma, A. J., Scanlon, K. S., Grummer-Strawn, L. M., & Dee, D. L. (2008). Breastfeeding-related maternity practices at hospital and birthing centers - United States, 2007. Center for Disease and Control, MMWR, 57(23), 621-625. Retrieved March 09, 2009, from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5723a1.htm

Ebersold, S. L., Murphy, S. D., Paterno, M. T., Sauvager, M. D., & Wright, E. M. (2007). Nurses and breastfeeding: Are you being supportive? [Electronic version]. *Nursing for Women's Health*, 11(5), 482-487.

Ekstrom, A., Matthiesen, A., Widstrom, A., & Nissen, E. (2005). Breastfeeding attitudes among counseling health professionals: Development of an instrument to describe breastfeeding

attitudes [Electronic version]. *University Scandinavian Journal of Public Health*, 33, 353–359.

Fairbank, L., O'Meara, S., Renfrew, M. J., Woolridge, M., Snowden, A. J., & Lister-Sharp, D. (2000). A systematic review to evaluate the effectiveness of interventions to promote the initiation of breastfeeding. *Health Technology Assessment*, 4(25), 1–171.

Freed, G. L., Clark, S. J., Sorenson, J., Lohr, J. A., Cefalo, R. & Curtis, P. (1995). National assessment of physicians' breast-feeding knowledge, attitudes, training, and experience [Electronic version]. *Journal of the American Medical Association*, 273, 472-476.

Gatti, L. (2008). Maternal perceptions of insufficient milk supply in breastfeeding. *Journal of Nursing Scholarship*, 49(4), 355-363.

Geraghty, S. R., Riddle, S. W. & Shaikh, U. (2008). The breastfeeding mother and the pediatrician [Electronic version]. *Journal of Human Lactation*, 24(3), 335-339.

Guise, J-D. & Freed, G. (2000). Research brief [Electronic version]. *Birth*, 27(1), 49-53.

Hale, T. W. (n.d.). Dr. Hale's homepage. *Texas Tech University School of Medicine*. Retrieved March 10, 2009, from http://neonatal.ttuhsc.edu/lact/aboutdrhalepage.html

Hasselbalch H, Jeppesen, D. L., Engelmann, M. D., & Michaelsen, K. F. (1996). Decreased thymus size in formula-fed infants compared to breastfed infants. *Acta Paediatrica*, 85(9), 1029–32.

Kistin, N., Benton, D., Rao S., & Sullivan, M. (1990). Breast-feeding rates among black urban low-income women: Effect of prenatal education [Electronic version]. *Pediatrics*, 86(5), 741–746.

Kramer, M. S., Chalmers, B., Hodnett, E. D., Sevkovskaya, Z., Dzikovich, I., Shapiro, S. et al. (2001). Promotion of breastfeeding intervention trial (PROBIT) [Electronic version]. *JAMA,* 285, 413-420.

Krogstrand, K. S. & Parr, K. (2005). Physicians ask for more problem-solving information to promote and support breastfeeding [Electronic version]. *Journal of the American Dietetic Association,* 1943-1947.

Kuehn, B. M. (2008). Preventive services task force endorses breastfeeding support in primary care [Electronic version]. *JAMA*, 300(22), 2598.

Labbok, M. (2008). Exploration of guilt among mothers who do not breastfeed: The physician's role [Electronic version]. *Journal of Human Lactation*, 24(1), 80-84.

Lawrence, R. A. & Lawrence, R. M. (2005) *Breastfeeding: A guide for the medical professional* (6th ed., pp. 747). St. Louis: Mosby.

Lu, M. C., Lange, L., Slusser, W., Hamilton, J., & Halfon, N. (2001). Provider encouragement of breast-feeding: Evidence from a national survey [Electronic version]. *Obstetrics & Gynecology*, 97, 290–295.

McDowell, M. M., Wang, C-Y., & Kennedy-Stephenson, J. (2006). Breastfeeding in the United States: Findings from the National Health and Nutrition Examination Surveys, 1999–2006. Center for Disease and Control. Retrieved February 07, 2009, from http://www.cdc.gov/nchs/data/databriefs/db05.pdf

Miller, L. C., Cook, J. T., Brooks, C. W., Heine, A. G., & Curtis, T. K. (2007). Breastfeeding education: Empowering future health care providers [Electronic version]. *Nursing for Women's Health*, 11(4), 374-380.

Nelson, A. M. (2007). Maternal-newborn nurses' experiences of inconsistent professional breastfeeding support [Electronic version]. *Journal of Advanced Nursing*, 60(1), 29–38.

Onis, M., Garza, C., Onyango, A. W., & Borghi, E. (2007). Comparison of the WHO Child Growth Standards and the CDC 2000 Growth Charts [Electronic version]. *Journal of Nutrition*, 137, 144-148.

Romano, A. M. & Lothian, J. A. (2008). Promoting, protecting, and supporting normal birth: A look at the evidence [Electronic version]. *JOGNN*, 37, 94-105.

Shealy, K. R., Li, R., Benton-Davis, S., & Grummer-Strawn, L. M. (2005). The CDC guide to breastfeeding interventions [Electronic version]. U.S. Department of Health and Human Services. Retrieved March 9, 2009, from http://www.cdc.gov/breastfeeding/resources/guide.htm

Spear, H. J. (2003). You sure can tell…[Electronic version]. *International Journal of Childbirth Education*, 19(1), 22-23.

Taveras, E. M., Capra, A. M., Braveman, P. A., Jensvold, N. G., & Gabriel. (2003). Clinician support and psychosocial risk factors associated with breastfeeding discontinuation [Electronic version]. *Pediatrics*, 112(1), 108-115.

Tofteland, L. (2006). How the desires of nursing mothers transformed the delivery of our care [Electronic version]. *AWOHNN Lifelines*, 10(4), 312-319.

Walker, M. (2007). International breastfeeding initiatives and their relevance to the current state of breastfeeding in the United States. *Journal of Midwifery & Women's Health*, 52, 549-555.

Wenner, L. (2007). Care of the breastfeeding mother in medical-surgical Areas [Electronic version]. *MEDSURG Nursing*, 16(2), 101-104.

Young, D. (2006). Media reviews [Review of the book *Breastfeeding Handbook for Physicians*]. *BIRTH*, 33(3), 206-07.

Appendix A

Benefits of Breastfeeding

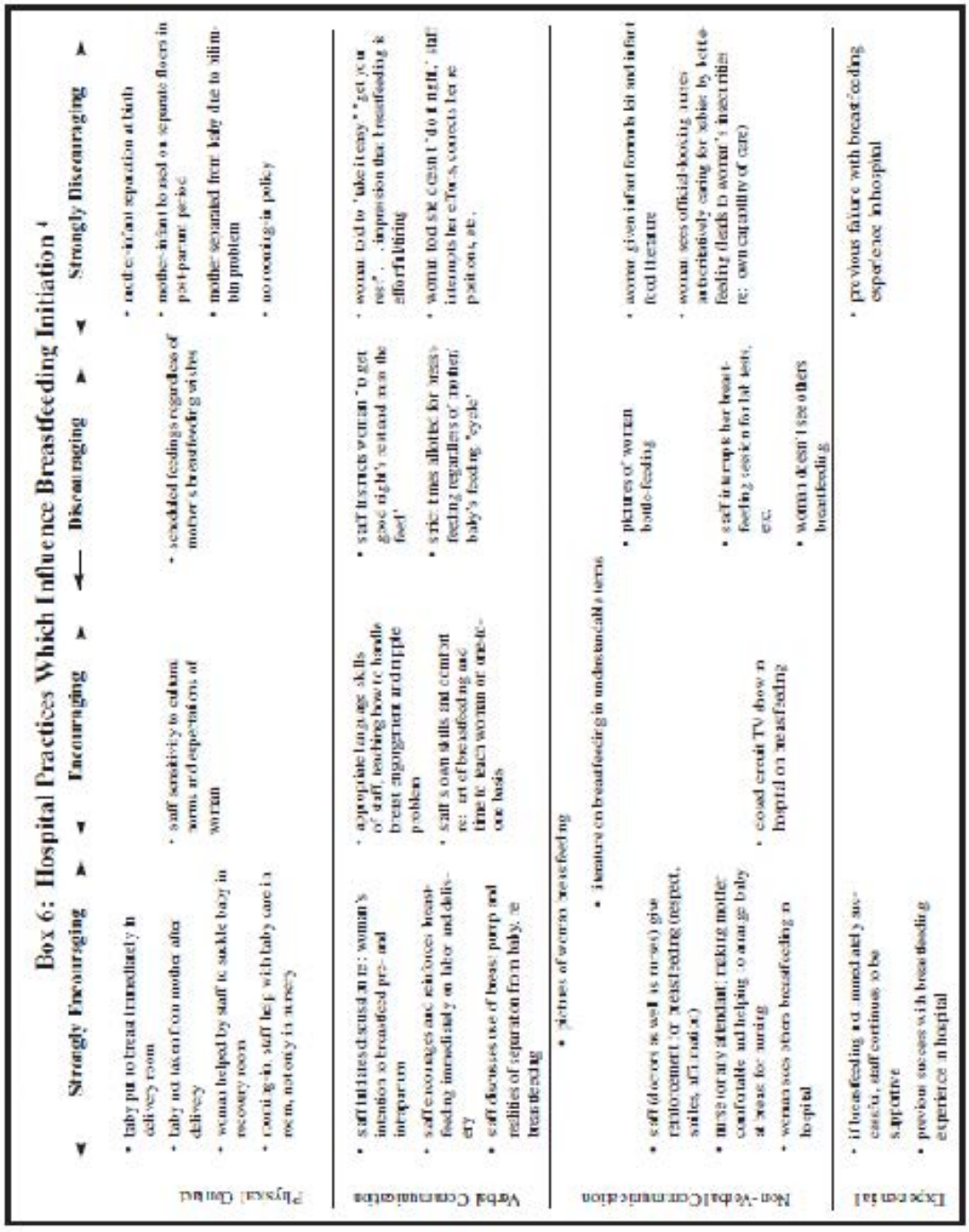
Infants who are breastfeed have decreased Sudden Infant Death Sydrome (SIDS) rates (Wenner, 2007; Labbok, 2008) decreased incidences of infection, childhood and adult overweight/obesity, (Labbok), childhood cancers, gastroenteritis, ulcerative colitis, Crohn's disease, necrotizing entercolitis, bronchitis, pneumonia, Diabetes Mellitus Type I (Wenner) and II (Crenshaw, 2005), otitis media, asthma, eczema (Wenner), urinary tract infections, diarrhea, neonatal septicemia, allergies, multiple sclerosis, rheumatoid arthritis, leukemia, and Hodgkins disease, (Crenshaw).

Acute	**Chronic**	**Enduring**
Gastroenteritis	Childhood obesity	Adult overweight/obesity
Ulcerative colitis	Childhood cancers Leukemia	Rheumatoid arthritis
Necrotizing entercolitis	Crohn's disease	Multiple Sclerosis
Bronchitis	Diabetes Mellitus Type 1	Diabetes Mellitus Type II
Pneumonia	Asthma	Serum cholesterol
Otitis media	Eczema	Lipoprotein level
Urinary Tract Infections	Allergies	
Diarrhea	Hodgkin's Disease	
Sudden Infant Death Syndrome (SIDS)		
Neonatal septicemia		

Appendix B

Example of Encouraging Versus Discouraging Breastfeeding

(Health and Human Services, 2006, p. 15)



Box 6: Hospital Practices Which Influence Breastfeeding Initiation [4]

	Strongly Encouraging	Encouraging	Discouraging	Strongly Discouraging
Physical Environment	• baby put to breast immediately in delivery room • baby not taken from mother after delivery • woman helped by staff to suckle baby in recovery room • couplet in staff help with baby care in room, not only in nursery	• staff sensitivity to cultural norms and expectations of women	• scheduled feedings regardless of mother's breastfeeding wishes	• mother-infant not tested on separate floors in postpartum period • mother separated from baby due to skin-to-skin problem • no rooming-in policy
Verbal Communication	• staff initiates discussions re: woman's intention to breastfeed pre- and intrapartum • staff encourages and reinforces breastfeeding immediately on labor and delivery • staff discusses use of breast pump and realities of separation from baby re breastfeeding	• appropriate language skills of staff, teaching how to handle breast engorgement and nipple problem • staff's own skills and comfort re: art of breastfeeding and time to teach woman on one-to-one basis	• staff instructs woman "to get good night's rest and rest the feet" • strict times allotted for breastfeeding regardless of mother/baby's feeding "cycle"	• woman told to "take it easy," "get your rest", impression that breastfeeding is effortful/tiring • woman told she can't "do it right," staff intervenes before CNAs, coaches her position, etc.
Non-Verbal Communication	• pictures of women breastfeeding • staff doctor as well as nurse(s) give reinforcement for breastfeeding (respect, smiles, affirmation) • nurse or any attendant making mother comfortable and helping encourage baby at breast for nursing • woman sees others breastfeeding in hospital	• literature on breastfeeding in understandable terms • good create TV show in hospital on breastfeeding	• pictures of women bottle-feeding • staff interrupts her breastfeeding, sends for lab tests, etc. • woman doesn't see others breastfeeding	• woman given infant formula bib and infant feed literature • woman sees official-looking nurses authoritatively caring for rather by bottle-feeding (leads to woman's insecurities re: own capability of care)
Experiential	• if breastfeeding established successfully, staff continues to be supportive • previous success with breastfeeding experience in hospital			• previous failure with breastfeeding experience in hospital

Appendix C

Current Maternity Practices by State
(DiGirolamo, et al., 2008, table 1)

TABLE 1. Mean total and subscale maternity practice scores, by state — Maternity Practices in Infant Nutrition and Care Survey, United States, 2007

State†	No. of respondent facilities§	% responding	Mean total score¶	Standard error of the mean total score	Mean subscale scores*						
					Labor and delivery	Breast-feeding assistance	Mother-newborn contact	Newborn feeding practices	Breast-feeding support after discharge	Nurse/birth attendant breastfeeding training and education	Structural and organiza-tional factors related to breastfeeding
United States	**2,687**	**82**	**63**	**0.3**	**60**	**80**	**70**	**77**	**40**	**51**	**66**
Alabama	47	87	55	1.9	45	71	55	69	27	53	63
Alaska	24	100	73	3.1	79	81	90	86	69	34	60
Arizona	36	71	62	1.9	58	80	75	76	34	52	62
Arkansas	27	60	48	2.3	43	67	57	62	24	29	53
California	201	80	69	1.1	63	82	77	77	49	61	70
Colorado	42	86	66	1.9	65	80	77	84	33	53	70
Connecticut	23	77	70	2.1	73	84	72	92	31	66	74
Delaware	7	100	63	7.0	47	81	77	86	34	39	72
District of Columbia	4	57	76	8.5	89	90	73	80	53	71	80
Florida	95	75	68	1.5	64	84	76	79	44	56	70
Georgia	70	81	56	1.3	48	75	64	71	25	50	63
Hawaii	9	75	62	1.4	79	76	83	80	14	38	60
Idaho	26	81	65	3.0	68	83	80	78	35	46	69
Illinois	109	59	60	1.2	48	78	64	74	35	54	67
Indiana	84	88	62	1.4	60	81	69	77	31	49	66
Iowa	74	91	61	1.2	50	78	66	76	44	44	64
Kansas	68	90	59	1.6	57	74	75	78	35	38	54
Kentucky	43	78	57	1.9	52	76	59	69	28	53	63
Louisiana	45	82	54	2.0	44	75	51	59	33	54	61
Maine	30	91	77	2.3	78	89	79	85	69	66	78
Maryland	29	81	61	2.3	55	79	69	77	26	48	69
Massachusetts	36	77	75	1.5	72	86	72	87	61	72	79
Michigan	76	79	64	1.6	63	81	74	79	33	47	68
Minnesota	85	84	65	1.4	62	82	71	76	54	41	65
Mississippi	38	84	50	2.1	42	69	48	63	28	43	55
Missouri	58	81	63	1.4	61	79	70	79	32	55	66
Montana	30	88	63	3.0	65	77	74	75	41	46	59
Nebraska	48	80	57	1.9	60	74	74	73	32	30	53
Nevada	13	65	57	4.4	52	75	69	74	29	42	59
New Hampshire	23	92	81	1.7	82	90	85	89	72	63	83
New Jersey	46	77	60	1.5	47	82	57	72	25	62	72
New Mexico	20	67	64	3.9	54	81	76	76	48	49	60
New York	110	75	67	1.1	61	84	66	77	48	57	76
North Carolina	71	84	61	1.4	54	81	66	76	31	53	68
North Dakota	17	94	59	3.2	59	80	64	72	31	47	62
Ohio	103	89	67	1.1	59	83	68	80	46	55	75
Oklahoma	49	82	57	1.7	57	74	70	71	21	47	58
Oregon	53	95	74	1.9	76	86	85	88	57	49	71
Pennsylvania	101	87	61	1.3	54	80	62	78	37	50	68
Rhode Island	5	71	77	7.1	64	93	72	86	75	68	85
South Carolina	37	86	57	2.7	47	74	55	66	41	48	62
South Dakota	19	83	61	2.5	56	79	68	78	36	45	67
Tennessee	64	88	57	1.7	53	74	61	73	26	47	62
Texas	190	75	58	1.2	52	73	64	69	35	52	59
Utah	31	79	61	1.8	67	77	66	79	26	48	64
Vermont	11	92	81	2.3	89	95	81	92	72	63	74
Virginia	49	82	61	2.0	53	78	61	79	32	58	67
Washington	65	88	72	1.5	77	86	89	85	53	43	64
West Virginia	27	84	55	2.5	53	76	58	71	25	44	58
Wisconsin	93	90	69	1.3	68	85	71	82	51	51	74
Wyoming	15	83	68	2.7	78	80	76	83	46	48	62
Puerto Rico	11	36	55	3.2	41	74	61	48	42	58	53

* Maximum possible mean score is 100. Subscale definitions: *Labor and delivery* = mother-newborn skin-to-skin contact and early breastfeeding initiation. *Breastfeeding assistance* = assessment, recording, and instruction provided on infant feeding; not giving pacifiers to breastfed newborns. *Mother-newborn contact* = avoidance of separation during postpartum facility stay. *Newborn feeding practices* = what and how breastfed infants are fed during facility stay. *Breastfeeding support after discharge* = types of support provided after mothers and babies are discharged. *Nurse/birth attendant breastfeeding training and education* = quantity of training and education that nurses and birth attendants receive. *Structural and organizational factors related to breastfeeding* = 1) facility breastfeeding policies and how they are communicated to staff, 2) support for breastfeeding employees, 3) facility not receiving free infant formula, 4) prenatal breastfeeding education, and 5) coordination of lactation care. Additional information regarding survey questions and scoring is available at http://www.cdc.gov/mpinc.

† In describing the results of this study, the District of Columbia and Puerto Rico are referred to as states.

§ Hospitals and birth centers.

¶ The rounded mean of the subscale scores.

Appendix D

Medication resources

Hale, T.W. (2008). Medication and Mother's Milk (13th ed.) Pharmasoft medical publishing.

Each entry includes the drug name and generic name; drug uses; AAP recommendations on the drug; a drug monograph with current, known knowledge about the drug, its ability to enter milk, the concentration in milk at set time intervals, and other clinically significant parameters; pregnancy risk category; lactation risk category; theoretic infant dose; relative infant dose; adult concerns; pediatric concerns; drug interactions; alternative drugs more suitable; adult dosage; table showing the adult half life (if known), pediatric half life milk/plasma ratio, the time interval to reach the highest level in the mother's plasma (peak time to max), percentage of maternal protein binding, oral bioavailability, the volume of distribution, the pH at which the drug is equally ionic and nonionic (pKa), and the molecular weight (MW) of the medication.

Also available on-line with institutional-wide access; more information at:
http://www.ibreastfeeding.com/catalog/index.php?cPath=8

American Academy of Pediatrics. (2005). Policy statement: Breastfeeding and the use of human milk. Pediatrics, 115 (2), 496-506. Available on-line at:
http://aappolicy.aappublications.org/cgi/content/full/pediatrics;115/2/496

American Academy of Pediatrics. The transfer of drugs and other chemicals into human milk. Available on-line at: http://aappolicy.aappublications.org/cgi/content/full/pediatrics;108/3/776 A list of 170 medications usually compatible with breastfeeding (indicates affect on milk supply and any minor adverse effects in mom or baby). Also lists drugs requiring temporary cessation of breastfeeding (i.e. radioactive agents). It also classifies some medications (i.e. psychotropic agents) with unknown or potentially concerning effects and 12 medications (significant effects in at least one breastfeeding infant) that should be given with caution (Crenshaw, 2005).

http://neonatal.ttuhsc.edu/lact/ Contains a links to breastfeeding forums for professionals hosted by Dr. Hale and many other breastfeeding related resource links

Drugs usually contraindicated
in lactating women (Wenner, 2007):

amiodarone (Cordarone®)
antineoplastic agents
bromocriptine (Parlodel®)
chloramphenicol (Chloromycetin®)

ergotamine (Wigraine®, Cafergot®, Ergostat®, Ergomar®, D.H.E. 45®)
gold salts (Ridaura®, Myochrysine®, Solganal®),
lithium (Carbolith®, Duralith®,Lithane®, Camcolit®, Liskonum®),
phenindione (Athrombon®)
radiopharmaceuticals
retinoids
tetracyclines,
pseudoephedrine (Sudafed®, Halofed®, Novafed®)

Appendix E

Reference Books for Health Care Professionals

American Academy of Pediatrics and American Collegeof Obstetricians and Gynecologists. (2006). Breastfeeding Handbook for Physicians. Washington, D. C.: Reviewed by Young (2006).

Lawrence, R. & Lawrence, R. (2005). *Breastfeeding: A guide for the medical professional* (6th ed.). St. Louis: Mosby.

Newman, J. & Pittman, T. (2006). The ultimate breastfeeding book of answers (3rd ed.). New York: Three Rivers Press.

Appendix F

Breastfeeding Websites

Aids
www.medela.com
www.hollister.com/us/mbc/breastfeeding/
http://www.breast-pumps-us.net.jpn.com/bailey_breast_pump.htm
http://www.babyangels.co.uk/links/info_27.html

Art
http://www.breastfeedingart.net/
http://www.kellymom.com/writings/bf-links-art.html

Clothing

http://mybreastpump.com/preciousimagecreationsmaternitytransitionalnursingwearpage.html

http://mybreastpump.com/nursingnightgownmaternitynightgownpage.html

www.glamourmom.com

www.maternityandnursing.com

www.breastfeedingclothing.com

www.milkface.com

www.onehotmama.com

Coalitions
www.breastfeedingtaskforla.org
www.hmhbcentx.org
www.binah.net/hcbc/index.html
www.breastfeeding.asn.au
http://www.4woman.gov/breastfeeding/aaba.htm

Dental
www.brianpalmerdds.com

General
www.bflrc.com
www.breastfeeding.com
www.breastfeedingonline.com
www.bsccenter.org

www.lactivist.com
www.promom.org/bf_info/index.htm
www.wiessinger.baka.com
www.edithkernerman.com
www.drjacknewman.com

www.kellymom.com

Insurance
http://www.ahip.org/content/default.aspx?bc=38|65|369|412|424

Government
www.cdc.gov/breastfeeding/support-home.htm
www.dshs.state.tx.us/wichd/lactate
www.fns.usda.gov/wic/Breastfeeding/breastfeedingmainpage.htm
http://www.4woman.gov/Breastfeeding/index.htm
http://www.4woman.gov/Breastfeeding/bluprntbk2.pdf

Legislation
www.lalecheleague.org/LawMain.html

Milk Banking
www.hmbana.org
www.mmbaustin.org

Mother to Mother Support

www.lalecheleague.org/WebIndex.html (to locate a local La Leche League leader)
www.ammehjelpen.no
Swedish link http://www.amningshjalpen.se/

Organizations
www.ilca.org
www.lalecheleague.org
www.iblce.org
www.bfmed.org
www.waba.org.my/
www.infactcanada.ca
http://www.usbreastfeeding.org/index.html
http://www.lllusa.org/index.php

http://gotmom.org

Policy Statements
http://aappolicy.aappublications.org
http://www.eatright.org/Member/PolicyInitiatives/index_21051.cfm

http://www.aafp.org/x6633.xml
http://www.apha.org/news/press/1998/brstfeed.htm
http://www.who.int/child-adolescent-health/NUTRITION/infant_exclusive.htm#
http://www.ilca.org/pubs/pospapers/HIVandInfantFeedingPP.pdf
http://www.napnap.org/practice/positions/breastfeeding.html
http://www.ilca.org/pubs/pospapers/InfantFeeding-EmergPP.pdf
http://www.midwife.org/prof/display.cfm?id=405
http://www.hmhb.org/ps_breastfeeding.html

Statistics
www.cdc.gov/breastfeeding/NIS_data/index.htm

Training
www.dshs.state.tx.us/wichd/lactate/courses.shtm
www.bflrc.com/products/lectures/exam_prep_course_desc.htm
www.breastfeedingbasics.org
www.healthychildren.cc
www.wellstart.org
www.breastfeedingoutlook.com
http://www.edithkernerman.com/
http://www.drjacknewman.com/

World Breastfeeding Week
http://www.waba.org.my/
http://www.lllusa.org/wbw/index.php

Telephone resources

African-American Breastfeeding Alliance 1-877-532-8535
National Breastfeeding Warm-line 1-800-994-9662